LEVISHAM MOOR

Archaeological Investigations 1957-1978

NORTH YORK MOORS NATIONAL PARK COMMITTEE

SCARBOROUGH ARCHAEOLOGICAL AND HISTORICAL SOCIETY

LEVISHAM MOOR: Archaeological Investigations 1957-1978

ERRATA

1. In Ch. 6 "Enclosure D" most of the compass directions are unfortunately reversed so, for instance, 'north east' should read 'south west'. The exceptions to this are:

   (i) para 2 line 7 should read 'south eastern'.

   (ii) para 10 line 1, 'east' is correct.

   Similarly the cardinal points of Fig. 15 are reversed.

2. In Fig. 1 Barrow No. 18 should be located 1.2 cm further south by the word 'Tumulus'.

LEVISHAM MOOR

Archaeological Investigations, 1957-1978

by

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1. The cover photograph was taken in 1979 by BKS Surveys Ltd
2. Plate 1 courtesy of R.H. Hayes
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PREFACE

In 1957, members of the Scarborough Archaeological and Historical Society, under the guidance of Mr. Frank Rimmington, started a survey and excavation of the outstanding prehistoric and mediaeval earthworks on Levisham Moor that were to continue for the next twenty years. The work was recorded by several of the participants and, in 1982, Mr. Raymond Hayes undertook the monumental task of drawing together this much-spread material with a view to publishing it. Subsequent editorial work was undertaken by Mr. Percival Turnbull.

In the meantime, the North York Moors National Park Committee had acquired the Moor to protect its special qualities as part of its primary objective of conserving the landscape. The Committee has always been committed to the protection and interpretation of the monuments in its care and is happy to join with the Scarborough Archaeological and Historical Society in the publication of this document, which has been prepared in a form that is aimed at a wider public while, at the same time, being of use to the professional archaeologist or serious student.

D. C. Statham.

National Park Officer

Director

National Park Service

FIG 1 Archaeological Features

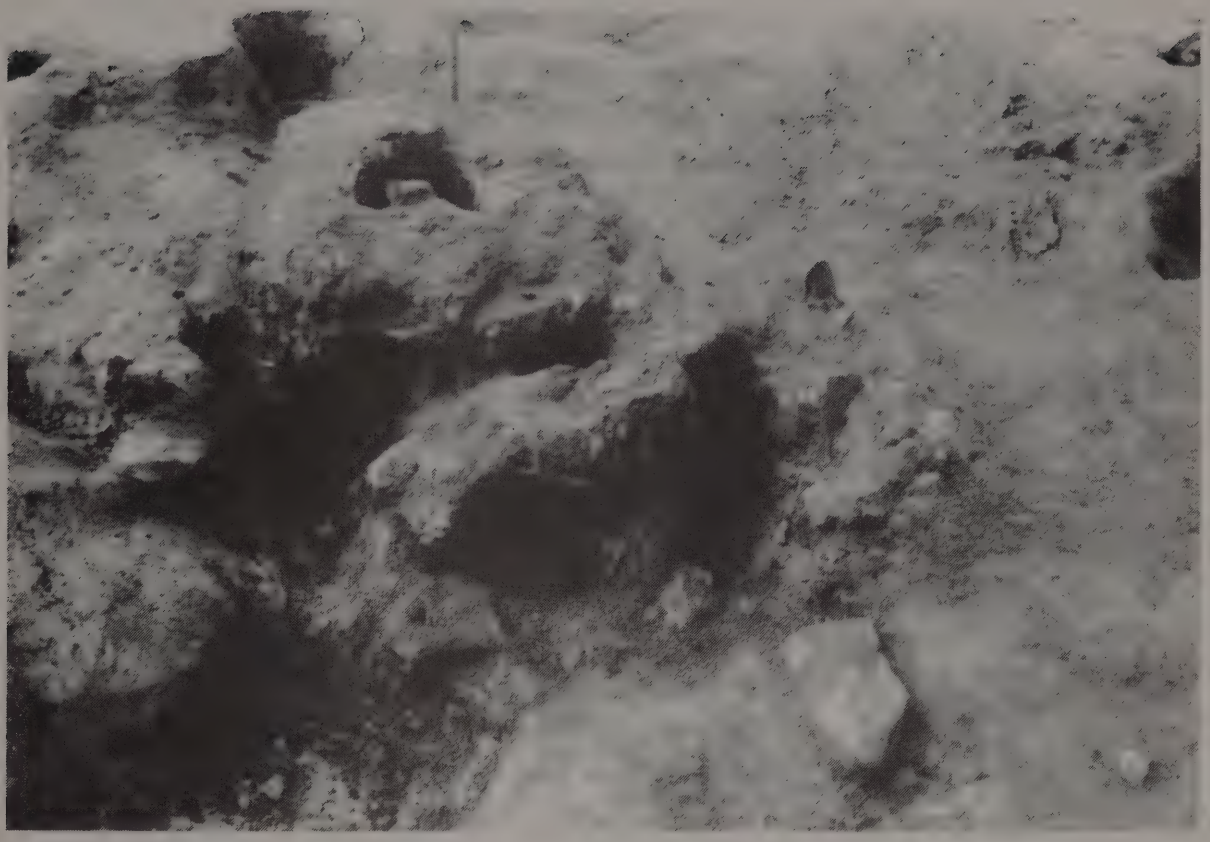

Plate 1. Iron-smelting furnace at the centre of Enclosure D

CHAPTER 1 : INTRODUCTION AND SUMMARY

The area of the North York Moors contains some of the most remarkable ancient landscapes in Britain, many in outstanding states of preservation ensured by an agricultural regime in which the amount of arable land is now minimal. An area of particular interest is Levisham Moor, now owned and preserved by the North York Moors National Park Committee, on which may be seen complex pattern of earthwork features indicating human activity over something approaching three thousand years.

Despite the opinion of one archaeological pioneer of the area (1), the present environmental aspect of the Moors is not as it was in antiquity. The area has benefitted perhaps more than any other in the country from the work of pollen analysts who from spores preserved in peat bogs and under earthworks have reconstructed the vegetational history of the Moors. This has been discussed at length elsewhere (2), and a general pattern may be perceived for the Moors in which the natural post-glacial forest cover was cleared by man sporadically and on a small scale during the Neolithic and Bronze Age periods, with by far the major period of clearance and of agricultural activity occuring in the Iron Age, extending into the Romano-British period.

The earliest surviving earthwork remains on Levisham Moor comprise a number of scattered barrows and burial cairns of Early Bronze Age date (Appendix H). These are spread over the high ground of the Moor, with a tendency to cluster at the top edge of West Side Brow, looking down to Newtondale. No trace survives of the settlements associated with these burial sites, but it is likely that they lie buried under hillwash, in the lower-lying arable land in the valleys; Newtondale itself may well contain the settlement of those who were overlooked by the burials of their fathers in the small barrow cemetery The location of their fields, if they did indeed practice arable agriculture, is another question. It is usually thought that barrows and other earthworks tend to be sited in land which has been cleared of its natural woodland cover and indeed, in many

cases, which has ceased to be of optimum use as agricultural land due to soil exhaustion; elsewhere on the Moors barrows may be seen to be sited on established grassland. If the field-systems of the Early Bronze Age do indeed lie on the high ground there is no trace to be seen, apart from the small area of 'Celtic' fields north-east of Enclosure 'A'. It is of course possible that the earliest field systems had no permanent boundaries.

There is no direct evidence for the relationship between the barrows and the series of linear dykes which traverse the Moor. Such dykes are a prominent and well-documented feature of Eastern Yorkshire, and are found on the Wolds as well as the Moors. Some dyke systems of the North York Moors have been surveyed and discussed in detail (3), and are considered to be of late Bronze Age or Iron Age date, serving to formalise 'estate' boundaries which had been observed since an earlier period.

It does not necessarily follow that the Levisham Dykes are of similar date, but the likelihood is strong. The cross-ridge dykes L4 and L5 bear a strong resemblance to the well-known site on Danby Rigg, where a similar relationship may be seen to barrow cemetries (4). Some clue to the dating of the Levisham dykes is afforded by the relationship of Dyke L6 to the excavated enclosures, particularly to enclosures 'B' and 'E' which may clearly be seen to abut and therefore to post-date it. Some elements in the system, such as dyke L9, may be of mediaeval date, but the main dyke complex appears to be of the early first millenium B.C. and to represent a series of boundaries related probably to a pastoral element in the economy. Full advantage is taken of the natural boundaries on the Moor, and in particular the dykes tend to run from the heads of the griffs, which are sharply defined gullies. It is possible to make out the remains of a roughly rectilinear system dividing up the Moor in this way, probably with the intention at least in part of facilitating stock control.

The surviving earthworks on the Moor are dominated by a series of rectilinear banked and ditched enclosures, concentrated along the eastern side of linear dyke L6. There is an outlier,

some distance to the east (site 'H'), but the main group seems to have been sited at least partly to take advantage of the shelter and protection afforded by the existing linear dykes. Enclosure 'B' nestles into the angle made by the two dykes; Enclosure 'E' is sheltered by the dyke on the west and, in just the same way, by a natural gulley, the head of Pigtrough Griff, on the south. The results of excavations on the enclosures are described in this report. The work was confined mainly to the actual banks and ditches of the enclosures, but when exploration was carried into the interior, as most notably at Enclosure 'B', the remains of huts were found, together with an abundance of domestic pottery and other refuse. One enclosure, 'D', was a specialist site given over to iron-working on a considerable scale.

The enclosures, which were found to be of the Late Iron Age to Romano-British period, with a most likely date for occupation somewhere within the first century A.D., may be taken as an indication of greatly increased activity on the Moor at such a period, with the focus of natural settlement, as opposed to land used permanently or seasonally for agriculture, shifting or expanding up from the lower ground. The rectilinear enclosed 'farmstead' is by now a very familiar late prehistoric settlement type in the north-east; many examples are known both in upland and lowland contexts (5) and a number of discussions are available. Generally speaking, they are known as isolated enclosures, either altogether discrete or sometimes associated with trackways or fields, and often show several phases of construction. It is not possible to say with authority that the Levisham enclosures are contemporary with each other; the pottery from each site is identical, but cannot be independently dated with any accuracy. If they are contemporary, however, as may be suggested by the conformity of their siting with regard to other man-made and natural features, parallels may be found at other sites in the north-east where rectilinear enclosures may have clustered in this way. One such site is Cockfield Fell in County Durham (6), another may be the earliest, pre-rampart phase of the oppidum at Stanwick (7). In the southern part of

the Vale of Pickering and elsewhere in the East Riding, aerial photography has disclosed linear dispositions of rectilinear enclosures linked by trackways and linear features stretching over considerable distances.

The concentration of prehistoric activity at Levisham Moor had a practical advantage in that the Moor lies at the junction of two distinctly different areas, each of which had its own particular resources to be exploited. Very different agricultural regimes are appropriate for the high, sandy grit area and for the lower-lying, sheltered and better-watered limestone to the south; wood, for fuel and browse, turf and minerals are other resources available to a site in the area of maximum exploitable potential where the different types of landscape meet.

Probably contemporary with the rectilinear enclosures is a group of fields, marked by low stone walls or banks, to the north-east, bordered by Howdale Griff on the north and dyke L6 on the west. The fields have the rectilinear 'brickwork' arrangement common to many field systems of late prehistoric or Romano-British date. It is unlikely that the whole of the original system survives; more may well have been destroyed by mediaeval or later agriculture.

Levisham Moor lies north of the system of mediaeval open fields worked by the village, and was used as rough pasture as well as a supply of wood and turf. Its use was largely constrained by the laws governing the Forest of Pickering. A group of vaccaries are known to have existed, and there is evidence, at site 'J', for the smelting of iron at this time. Long straight lines of rigg and furrow north of Dundale and Pigtrough Griffs are difficult to explain; they may be as recent as the nineteenth century (there are local tales of corn being grown as high as Horness in the nineteenth century). These large areas of ploughing run very close to the Iron Age enclosures, and indeed look rather as though they had been laid out in relation to the enclosures, but there is no other evidence to support the possibility of their prehistoric date. The lynchets on Horness Rigg are, however, likely to be of Iron Age date, though again concrete dating evidence is slender.

Certainly late in date are the elongate 'pillow mounds' at the south end of West Side Brow, which are the remains of artificial rabbit warrens of the seventeenth to eighteenth centuries. The Walker Pit and its chimney and works are no more, but the shooting hut, Skelton Tower, still stands as a reminder of the importance of the Moor as sporting land in recent times (as well as in the Middle Ages).

Levisham Moor is an ancient landscape of enormous importance, the future survival of which is now safe in the hands of the North York Moors National Park Committee. This report is a compilation of some of the evidence presently available, but the Moor still retains a very high potential for research into the nature of prehistoric and later exploitation of the land's resources, into the human and environmental factors which governed its development, and into the character of the human population who have shaped it.

CHAPTER 1 : REFERENCES

1. Elgee, F., 1931. 'Early Man in North-East Yorkshire'

2. Spratt, D.A. and Simmons, I.G., 'Prehistoric Activity and Environment on the North York Moors' in Journal of Archaeological Science, 3. See also Jones, R.L., Cundill, P.R. and Simmons, I.G. 1979 'Archaeology and Paleobotany on the North York Moors and their Environs' in Yorkshire Archaeological Journal, 51.

3. Spratt, D.A., 1981, 'Prehistoric Boundaries on the North Yorkshire Moors' in Barker, G. (ed). Prehistoric Communities in Northern Britain. See also: Spratt, D.M., 1982 'The Cleave Dyke System' in Yorkshire Archaeological Journal, 54

4. Elgee. Loc. cit., p. 136.

5. Challis, A., and Harding, D.W., 1975. Later Prehistory from the Trent to the Tyne, Fig. 92.

6. Roberts, B.K., 1975. 'Cockfield Fell' in Antiquity XLIX, 193

7. Information to be published shortly by P. Turnbull.

CHAPTER 2 : GEOLOGY AND NATURAL SETTING

The Levisham area is a part of the Tabular Hills of the North York Moors and is circumscribed by natural features on all sides. To the north it is defined by a sharp escarpment which falls 52 metres to Saltersgate Moor, this swings around to the west to form West Side Brow, the upper step of the deep Newtondale Gorge. To the north-east, the Hole of Horcum presents a steep-walled basin over 75 metres deep; from it Levisham Beck drains south for 2.5 kilometres before turning west in its narrow, steep-sided valley to join Newtondale and to complete the ring of natural boundaries. The elongate and isolated block thus defined, measuring 5 kilometres from north to south and 1.6 kilometres wide, tilts gradually from about 275 metres O.D. at its northern rim to 152 metres O.D. in the south. It is divided almost equally between the cultivated southern part around the village of Levisham and the higher uncultivated Levisham Moor to the north. This difference in character is largely determined by differences in the underlying rock.

Most of Levisham Moor lies on Lower Calcareous Grit of Jurassic Age, in contrast with the Corallian Limestone which underlies the southern part of the area. The Grit is a grey, fine-grained sandstone which weathers readily, losing its lime in the process. It breaks down further to the yellow-buff sand which mantles much of the moor and which is easily eroded when the thin organic cover is broken. As a result of this process the small , broad valleys which cross the Moor are choked with sand to depths of several metres. Rain falling on the Moor at a rate of about 100 cms. per annum percolates readily through the sandy subsoil with the result that it flows in the valleys on or near the rock-head but below the sand-plug, breaking only sporadically to the surface and then disappearing again. Only where these flows approach the escarpment edges do they regularly reach the surface (though often only in wet periods) in small, rocky ravines known as griffs.

Under the present climatic regime, the surface water supply on Levisham Moor is minimal. The small Dundale Pond may result

from the slightly more clayey content of the higher beds of Lower Calcareous Grit, which would reduce percolation; there is some doubt regarding its origin and it may originally have been clay-lined by man. The Pond's water level has been raised by an earthen dam without which it would be little more than the tiny Seavey Pond to the north.

CHAPTER 3 : ENCLOSURE 'A' (Figs 1-8)

Of all the earthworks on Levisham Moor, by far the most impressive is enclosure 'A', (SE 831923) an irregular four-sided enclosure known locally as 'The War Camp'. It resembles, at first sight, a small Roman fortlet, with prominent bastion-like corners at the north-east and south-east. The ditches on the eastern and western sides are still as much as 3.5 metres below the top of the bank. However, closer inspection soon contradicts the Roman military interpretation. The clearly marked entrance, only some 3 metres wide, is in the south-east corner. In shape the enclosure is trapezoidal rather than square, varying from 50 metres to 60 metres from east to west, and from 50 metres to 54 metres from north to south. It is sited on high ground at 205 metres above sea level - not, however, the highest location on the moor. Excavations were carried out between 1957 and 1961, and took the form mainly of a series of sections aimed at investigating the bank and ditch.

South Side

The southern side of the enclosure differed notably from the others in showing only the slightest traces of bank and ditch. It was necessary at an early stage of the excavation to ascertain whether or not the enclosure had ever been completed, and whether or not there had in fact been a south ditch. This was indeed located, and slight traces were found of the corresponding bank. A possible entrance, additional to that in the south-west corner, was suggested by surface indications a few metres west of the south-east corner. Removal of the turf at this point (sections A1E and A1W) disclosed a causeway some 5.5 metres wide, with the area between the ditch terminals roughly paved with limestone slabs. This paving was confined to the causeway, and did not extend far within or without the enclosure. The ditch terminals were 2 metres deep below the modern surface, and cut through hard Corallian Limestone to the underlying Calcareous Grit. On the lip of the eastern ditch-terminals it had been found necessary to add to the consolidation of the causeway by revetting with stones above the bed-rock.

3 metres north of the centre-line of the south ditch was found a smaller, parallel east-west ditch (visible also in sections A2 and A3). This feature was only 1.5 metres wide, and was filled with grey-brown soil with bands of yellow sand and a darker humic layer at the base; it had clearly stood open long enough for a substantial cover of vegetation to be established before the ditch had been filled in. It was certainly earlier than the building of the main enclosure, for in several places it was overlain by the bank or rampart of the main south ditch (e.g. section A3). This early ditch was later found to extend to the west beyond the confines of Enclosure 'A' and to approach the linear earthwork L6, with which it may be contemporary. A similar and roughly parallel feature lay a few metres to the south; the two may have flanked a trackway.

At its eastern end, near the paved entrance causeway, the smaller ditch had been widened and deepened into a pit which had apparently been used as a hearth. Here, instead of the usual silty infilling found elsewhere in the ditch was a 10 cms. layer of ash and charcoal with many sherds of a dark brown, coarse pitted pottery. Associated with the hearth was the lower stone of a rotary quern. A little to the north of the quern was a single stone-packed post-hole capable of taking a pole 15 cms. in diameter. This could not be associated with the hearth or with the later earthworks, and may represent part of a gate structure in the later phase. Also to the north of the earlier ditch lay a compacted layer containing small sherds of coarse pottery, iron-slag and stones. It is not clear to which phase this deposit belonged.

The main southern ditch of Enclosure 'A' was examined in several places. The bottom varied from 1.8 to 2.3 metres below the present surface, was flat and between 60 cms. and 1 metre wide. It was everywhere cut into the natural rock in its lower levels. The stratigraphy of the ditch is best seen in section A2. The lowest silt, grey in colour, probably owed its nature to the reducing action of stagnant water, its clayey character suggesting a long period of undisturbed wet conditions. This layer contained a considerable quantity of domestic rubbish;

charcoal, ash, animal bones (chiefly ox), burnt stones, clay and the coarse native pottery. Above this on the inner side lay a deposit of yellow sandy material (layer B) which had been either washed down from the rampart by the weather, or deliberately shovelled in. After this a 60 cms. band of sterile grey silt was laid down, probably in wet conditions (layer C). Above this, and about 1 metre above the ditch bottom, was a black layer rich in charcoal (layer D) including oak and hazel. This may represent a destruction phase, the final dismantling of the site some time after the possible demolition of the rampart (with the sterile layer C suggesting an intervening period of inactivity). The charcoal may otherwise have been dumped from elsewhere. There is evidence for a second period of burning at an even higher level, with the charcoal identified as birch; this may be associated with mediaeval or later agricultural operations.

South-east Corner

The south-eastern corner of the enclosure was examined in some detail in section A4. Here, the bank was particularly well preserved, standing quite 3.5 metres above the present level of the ditch. The entire rampart at this corner was a mass of limestone slabs quarried from the nearby ditch, where the rock approaches very close to the surface. The change in conditions is reflected by the grass which flourishes at this point, rather than the heather and bracken elsewhere. Less acid conditions are also shown by the abundant population, in the interstices of the stones, of shells of the common snail, Helix aspera; many hundreds of shells were found in the relatively small area of rampart examined, suggesting the different economic and climatic conditions during the period when the rampart was exposed and accessible to the snails.

The rubble of the rampart had not been laid in any particular order, being merely piled up as quarried. It was spread to some 7.5 metres in width and survived over a metre high over the original land surface. It may have been revetted with timber or held a fence on its top, although there is very little evidence for this; one or two post-holes were observed on

the rampart, one having a small piece of plain Samian pottery in its filling.

Inside the south-east corner, and partly covered by the spread of the rampart, was thick black occupation layer between 20 and 30 cms. thick and described as "almost industrial in character", with a large amount of ash, charcoal and native coarse pottery. If this is the same layer as that observed in Section A1, it is spread over a considerable area. Within the black layer was a 'trough' of soft plastic clay 60 cms. by 40 cms., and 15 cms. deep. Also associated with the layer were sherds of native pottery and a bun-shaped spindle-whorl.

The main enclosure ditch at this south-east corner was cut into solid limestone and into the softer grit beneath. The turn of the right-angled corner could clearly be seen, the outer edge broken where it is joined by the ditch of Enclosure 'C'. No stratigraphical relationship was recorded between the two ditches: the fill of each was similar and there is no real difference between pottery finds from the two features. It appears from the plan, however, that the ditch of Enclosure 'C' is likely to be later than that of Enclosure 'A'.

North-east Corner

The most impressive and well-defined of the four corners is at the north-east of Enclosure 'A', where the rampart again stands about 3.5 metres above the ditch. Within living memory there had been on this corner a pole carrying a hawk-trap, erected by a gamekeeper. A decayed pine-trunk, the original post, lay in the ditch bottom, and two very well-preserved post-holes on the rampart top add weight to the story and suggest the probability of modern disturbance of the upper part of the rampart. The ditch adjacent to the corner was explored by Section A12 and found to be over 6 metres wide and 3 metres deep: the stratigraphy accords well with other points on the ditch.

A full section was obtained of the north ditch in Section A13. The original soil was particularly clear at the junction of ditch and rampart, and showed that the ditch was cut to 2.5 metres into the Calcareous Grit. Only 30 cms. of rampart survived.

The filling of the ditch was notably homogeneous. In search of occupation traces, the section was extended into the interior of the enclosure. About 21 metres south of the bank was encountered a circular mound 4.5 metres in diameter and 70 cms. high. Constructed of turf, it contained no significant stratification, and had been much disturbed by rabbit activity. Three or four small sherds of calcite-gritted ware and a rim of Knapton type ware were found. The function of this mound remains unknown; it overlies two small pits or hollows but has no clear purpose, and a local tale that this was where the may-pole was raised lacks corroboration.

West Side

Section A16 explored the western bank, a metre or so high and 2 metres wide. A single post-hole on the crest of the bank was found, 45 cms. in diameter and 38 cms. deep. It contained a spindle whorl made from a piece of decorated Samian ware of the early second century A.D.; this might give a date for the construction of the post-hole, or might conversely have been deposited when the post was removed. A second, smaller, post-hole was recorded 1 metre down the outer side of the rampart.

South-west Corner

The south-western corner of Enclosure 'A' was the most complex. Even from surface indications could be seen an entrance just north of the corner, the ditch crossed by a raised causeway. Excavation showed a paved way 3 metres wide, similar to that near the south-east corner, entering the enclosure through a gap in the bank (visible in Section A10). No post-hole of either gate or palisade was found. From the entrance a narrow hollow track led down to the linear dyke L6, to the west.

The infilling of the ditch to the south of the causeway was not dissimilar to that at the south-east entrance, with a primary layer including burnt stones, charcoal and pottery overlain by a sterile grey clay silt. The excavators noted that the rampart had been largely shovelled back into the ditch; this was corroborated by the section of the west ditch, section A11, where a mass of tumbled stones presumably derived from the rampart lay on the inner side of the ditch.

South of the entrance causeway was encountered a small ditch, 1.3 metres deep, which intersected with the main enclosure ditch, though no stratigraphical relationship was recorded. This appears to have been the ditch along the north side of Enclosure 'C', visible in Sections C8 and C11 and related to the early ditch previously noted as underlying the rampart of Enclosure 'A'. It contained coarse native pottery of the same type as that found in the sections of the main enclosure, and could be traced considerably to the west of the enclosure, to within 2.5 metres of the dyke L6. It was noted that the earliest fill of the main enclosure was a pronounced layer of ash and charcoal, perhaps derived from the clearing of scrub in the initial construction phase: this layer was absent from the smaller ditch, a suggestion that the two were not contemporary.

Enclosure 'A' is an extremely well-preserved earthwork of imposing dimensions. Considerable labour was evidently expended on its construction, even to the point of cutting parts of the ditch through the hard bed-rock. In view of this, it seems likely that defensive considerations played at least some part in its building. The provision of a stout bank and defensive ditch around a settlement site may of course owe as much to cultural tradition as to any likelihood of attack by an enemy, and such defences, like palisades, are often considered to be a protection against animals as much as against unfriendly human groups. It is not necessary to invoke the presence of the Roman military sites at Cawthorne and Lease Rigg, Grosmont, to account for the presence of the site, for the tradition of heavily-ditched rectilinear enclosures of this type is common throughout the Iron Age of much of Britain, and the settlement type is particularly well-known in the north-east.

Although exploration within the enclosure was not on a scale sufficient to provide absolute corroboration, it seems probable that a domestic establishment lay within it, as within Enclosure 'B'; the considerable quantity of domestic pottery found within the banks bears out the idea. The most distinctive feature is the location of entrances at the corners: this arrangement may be found at many other sites (though a single entrance is perhaps

more usual than the two at Levisham), with local examples at Rillington (1) and in the early enclosure at Langton (2).

CHAPTER 3 : REFERENCES

1. Turnbull, P., 1983. 'Excavations at Rillington, 1980' in Yorkshire Archaeological Journal, 55

2. Corder, P. and Kirk, J.L., 1931. 'A Roman Villa at Langton near Malton' Roman Malton and District Report No. 4.

CHAPTER 4 : ENCLOSURE 'B' (Figs. 1, 2, 9-12)

Enclosure 'B' (SE 831925) is a small, irregularly rectilinear earthwork lying in the acute angle formed by the junction of the two linear dykes L6A and L6B, a short distance to the north-west of Enclosure 'A'. As in the case of Enclosure 'E', which also abutted a linear feature, it is clear from the plan of surface remains that the enclosure is later in date and has been fitted in to take advantage of the earlier earthworks which define its western and southern (strictly south-eastern) sides. The later earthworks on the northern and eastern sides are slighter in character; the bank varies from 2.3 metres to 3 metres in width and averages a metre in height, with the ditch on average of 2.4 metres wide. In the eastern bank is a clear entrance gap 2.7 metres wide, with no corresponding causeway across the ditch, which may have been crossed by a wooden bridge. A similar gap in the west bank may also be an original entrance. The northern rampart is 27.5 metres in length; the eastern rampart 29 metres; the southern, 35 metres and the western 36.5 metres. An aerial view shows a trace of a possible slight counterscarp bank on the eastern side. The interior of the enclosure slopes down to the west, and the north-western part is covered in boggy black peat.

The excavation took the form of a series of long sections, and provided the clearest evidence of any from the work on Levisham Moor of domestic occupation within the enclosure.

Hut I

Hut I showed faintly on an aerial photograph, and lay a little way inside the southern bank. It was traversed by Section B12. The area of the hut was defined by an irregularly circular gulley 60 cms. wide and 20 cms. deep, filled with a greyish-yellow silt. This gulley enclosed an area roughly 12 metres in diameter, and may be interpreted as a drain or eaves-drip gulley surrounding the hut: there was no evidence that it had acted as a foundation-trench for timber uprights or walls. Immediately within the gulley, in the eastern and south-western arcs, were found a small number of small post-holes,

averaging only 15 cms. in depth and diameter. These may be compared with the ring of post-holes found at Site 'D' and are presumed to represent the outer walls of the hut: an alternative interpretation suggested by their small size and extreme proximity to the ring-gulley is that they are the remains of an arrangement for tying down to the ground the bottom ends of the roof timbers of an approximately conical hut. A group of larger post-holes in the eastern section of the trench B12 may be elements of an inner-ring of more substantial timbers, although this was not confirmed on the western side, where there was altogether a lack of structural evidence. There was no indication of the alignment of the entrance to the hut.

A couple of metres outside Hut I, at the junction of trenches B6B and B9, was found a large coarse storage jar, sunk into the ground and packed with a few stones at its sides. It may have been placed in this way for its original purpose, of storage, but the fact that the base is missing suggests the possibility that the jar was deposited late in its life to serve a secondary function, perhaps as a urinal.

Hut II

Unfortunately, only about one-third of the area of Hut I was excavated. However, to the north was found evidence interpreted as a second structure, Hut II. Some 4 metres within the eastern entrance gap a roughly cobbled area 6 metres by 4.6 metres was excavated in trench B3. A scatter of pottery lay upon the stones, which included two fragments of the base-stones of rotary querns. A fragment of a decorated glass bangle, the only object of beauty among the finds at Levisham, lay between the stones.

On the south edge of the cobbles was a hearth burnt into the sandy subsoil, with a few stones built into it and large amounts of charcoal. It was oval in shape, measuring 1 metre by 70 cms. Associated with it was coarse pottery and a few struck flints. Flanking the cobbles were the terminals of two shallow gullies or drains, with a 2 metre gap between them Both gullies showed a distinct curve, and superficially the layout suggests a structure defined or encircled by the gullies, with the entrance paved with cobbles. It is however impossible to reconstruct a circular or penannular plan, hoever, irregular, and there were no

post-holes or structural features associated with the putative hut. The eastern arm of the drain quickly petered out within the area of cobbles: the western arm, however, was traced across the enclosure in trenches B8 and B17, where it seemed to run under the enclosure bank (although this might be thought unlikely as it implies that the drain and associated features should pre-date Enclosure 'B'). The cobbles and hearth certainly suggest a domestic structure, and the most likely explanation is that there was a small hut around the hearth, drained by the pair of gulleys which today lead through the boggiest part of the site. It may also be that the cobbles are associated with the earthwork entrance and that the hearth was isolated and free-standing: not enough evidence survives of certainty.

The Bank and Ditch

Several sections were cut into or across the main earthworks of Enclosure 'B'. One, Section B10, was taken south over the enclosure to give a short longitudinal section of the linear dyke L6. Although no stratigraphic relationship could be recorded, it was clear that the builders of Enclosure 'B' had not at this point relied solely upon the earlier cutting which had been deepened by the ditch around the corner of the enclosure. A compact layer of stones in a strip over 2 metres wide formed a solid base for the enclosure bank and gave evidence for a narrow berm between it and the enclosure ditch, at this point 1.8 metres deep and substantially filled with a mass of yellow clay silt or backfill from the bank. At the back of the bank in Section B10 lay a clay-lined hollow 62 cms. in diameter and 32 cms. deep (marked as 'trough' on the plan); it contained a packing of burnt pebbles similar to 'pot-boilers'.

Further sections of the enclosure earthwork were obtained in Sections B1, B6 and B8. Ditch sections showed a stratigraphy broadly consisting of two layers: the primary silt was of fairly clean sandy material, up to half a metre thick, washed into the open ditch at an early stage in its history; above this was a thick clay deposit representing the backfilling of the ditch with earth and rubble from the bank. In places the two deposits were separated by a 5 cms. deposit of iron-pan. A good section

of the bank was obtained in Section B1, showing a core of black-grey soil surmounting a grey sandy subsoil, the two being separated by an iron-pan layer. Pieces of quern were recovered from this section, and it is worthy of note that quernstone fragments were fairly common finds within Enclosure 'B'.

CHAPTER 5 : ENCLOSURE 'C' (Figs. 1, 2, 12, 13)

Enclosure 'C' (SE 831923) takes the form of an irregularly rectilinear area bounded on its north side by Enclosure 'A', and by the 'trackway' defined by the pair of early parallel ditches identified during the excavation of Enclosure 'A'. The western side of 'C' is marked by the linear dyke L6, which from the lay-out of this part of the earthwork complex appears to be earlier in date than any other visible feature. The southern boundary of 'C' is a shallow lynchet-like earthwork which was examined in trenches C6, C12 and C13 and found to consist of a stone bank and slight ditch. On the eastern side, the boundary is the small north-south ditch noted during the excavation of the south-east corner of Enclosure 'A'. This ditch was rock-cut at its base and measured some 2.5 metres wide by 85 cms. deep; it was traced for about 60 metres to the south where it ended in a mass of stones. Pottery finds were of the coarse native wares common to all of the Levisham Moor enclosures, and a lead spindle whorl was also found.

At first Enclosure 'C' was thought by the excavators to be an annexe to Enclosure 'A', most probably a field plot attached to Enclosure 'A' at a time when cultivation was practised: an aerial view suggests that the whole of the slope between Enclosures 'A' and 'E' was taken up at some time by agricultural activity leading to the formation of rigg-and-furrow. There are problems however with this interpretation of Enclosure 'C', and it may well be that it does not in fact represent a discrete enclosure. The 'trackway' marking its northern side certainly appears to pre-date the construction of Enclosure 'A', but the eastern ditch visible in sections C1-C4 seems to abut the corner of the Enclosure 'A' ditch and to post-date it. Additionally, the western side is marked only by a pre-existing dyke. It is perhaps the case that Enclosure 'C' does not represent a discrete and definable entity at all, and is marked merely by the chance juxtaposition of various features of various dates.

CHAPTER 6 : ENCLOSURE 'D' (Figs. 1, 14 - 17 and Plate 1)

Enclosure 'D' (SE 830922) is situated on a slight rise at the head of Pigtrough Griff, some 30 metres to the west of the great linear dyke L6. The enclosure itself is very small, and consists of a pair of concentric penannular ditches within which stood a roughly circular timber structure which in turn enclosed an iron-smelting furnace.

The Enclosure Ditches

The form of the enclosure was of an approximate horse-shoe shape, open on the western, downhill, side and defined by a pair of concentric ditches, an average of 2.5 metres apart at their centre-lines. The outer ditch enclosed an area measuring 14.5 metres along the north-south axis; the south-western branch of the ditch was extended in a straight line for a few metres until it petered out, while the north-eastern branch merged into the slack at the head of the griff. A length of ditch recorded in the north-western extension to the excavation may possibly have joined the two apparent ends of the horse-shoe, but the suggestion is contradicted both by the slighter nature of this feature (c. 1 metre in width) and by the acute angle which it would have to make at the south-western corner of the enclosure. The profile of the outer ditch was irregular: its width on the north-eastern side varied between 1.15 metres and 1.52 metres with a depth of some 76 cms.; on the south-western side it had widened to 1.83 metres by some 1.5 metres deep. A bank of upcast material could clearly be discerned along the inner edge of the ditch on the south-western side of the enclosure.

The inner ditch conformed closely to the horse-shoe shape, with well-defined terminals flanking an entrance gap 4.57 metres wide. It was less substantial in nature than the outer ditch, the width as little as 53 cms. and the depth averaging 38 cms.

All of the excavated ditches proved to contain large amounts of iron slag. Otherwise the fills consisted of a uniform hard, clayey silt, indicating that the ditches had been filled by a long period of natural inwash rather than deliberately by a back filling operation. In places, a natural mineral pan had

formed in the upper levels of silt, but there was otherwise no discernible stratigraphic division and no evidence for recutting of the ditches. The function of at least the outer ditch seems to have been to carry off floodwater carried down Pigtrough Griff. The inner ditch would have acted as an eaves-drip gully for the round-house.

The Timber Structure

Within the area defined by the inner ditch, about 10 metres in diameter, were recorded twenty-five post-holes. Virtually the whole of the enclosed area was examined save the margins immediately within the inner ditch; a largely complete plan of the structure represented by the post-holes was therefore obtained. Broadly speaking, the posts formed a single ring some 6 metres in diameter, most clearly to be seen in its eastern arc. It is possible that this represents merely an irregular circular shelter or windbreak to protect the smelting furnace which lay within, but the form corresponds to those of Iron Age houses from all over Britain and it is reasonable to infer, both from the limited evidence available on this site and by analogy with other excavated sites with this type of industrial activity, that a timber round-house occupied the space within the enclosure and itself contained the furnace.

The outer posts, which presumably supported the walls of the hut, were small in size and capable of supporting only fairly light timbers; some post-holes were as little as 15 cms. wide by 10 cms. deep. Within the circle were a few more substantial post-holes: these may have held roof supports, but may alternatively have supported some apparatus (perhaps a bellows) associated with the industrial activity. The evidence for the house construction corresponds fairly well with the more limited information for Hut I in Enclosure 'B', particularly if the inner ditch of Enclosure 'D' is seen as fulfilling the role of an eaves-drip gulley, meant to improve the drainage of the house itself. It may be assumed that the orientation of the house entrance corresponds to that of the enclosure, and a larger double post-hole between the terminals of the inner ditch might possibly have held a door post. There is, however, no trace

of the rectangular porch common on many round-houses.

The Furnace

The area inside the hut was largely occupied by two pits and by a shallow scoop or depression, approximately 3 metres by 1.8 metres, which contained the furnace. At least three phases of construction were evident the most recent of which, Furnace III, was preserved in an almost intact state, built over the remains of Furnaces I and II.

Furnace III consisted of a dome of burnt clay, oval in shape and open at the top, which survived to within a few centimetres of the modern soil surface. The external measurements were 91 cms. by 76 cms., the internal measurements 32 cms. by 40 cms. The height from the furnace floor to the top vent hole was 40 cms.; the vent-hole itself had a diameter of 22.5 cms. The furnace was lined with slag for almost all of its surviving height, and a small quantity of slag, together with a little charcoal, was recovered from the furnace floor. The wind-hole for the bellows was identified on the south-western side, and led into Hollow B, the working-hollow for this phase of the furnace as Hollow A probably was for Furnace I. The sand under and around Furnaces I and III showed considerable signs of burning. Very little survived of Furnace II.

Two pits adjacent to the furnace may have been connected with the further processing of the iron bloom. One, north-west of the furnace hollow, measured 1.2 metres by 1 metre, and 71 cms. in depth. A 5 cms. layer of "grit" (slag-droplets?) and charcoal lay at the bottom. A second pit, south-east of the furnace, was smaller in size (68 cms. diameter and 60 cms. deep) and was filled with layers of clinkers and burnt stones. It was suggested by one of the excavators that larger stones both from the furnace hollow and from this pit might have been used as anvils.

To the east of the iron-working area, immediately outside the entrance of the inner enclosure, was located a dump of iron slag about 4.5 metres in diameter. The quantity of material represented in this dump, together with that scattered across the site, is indicative of a considerable or prolonged industrial

activity.

Enclosure 'D' at Levisham is of great interest as a well-preserved early iron-working site in which there is every indication that the enclosure and structure were entirely given over to this particular use, suggestive of a high level of specialisation. Pottery finds indicate on approximate contemporaneity with the settlement evidence from the other enclosures, with a date perhaps in the first century A.D. Although it is impossible to be sure whether or not the dates exactly correspond, the suggestion is of a more-or-less scattered settlement with the specialised industrial function confined to the particular area of 'D' (notwithstanding the slag found in the ditch of Enclosure 'A'). This is not to suggest that iron-production at Levisham was for the service of more than the immediate community; indeed, as more evidence is accumulated for settlement in the upland and marginal areas of the north, it appears that domestic iron production was common.

The Levisham furnace belongs to the group of domed or pot furnaces as defined by Coghlan (1), having a circular hearth, flat or hollowed, with a domed superstructure above it, rising to a central aperture. The type is common throughout northern Europe.

The most immediate parallel to the Levisham site is that excavated by Jobey at West Brandon, County Durham (2), a rectilinear double-palisaded enclosure containing a post-built circular house. Two furnaces were recovered, each somewhat smaller than the Levisham example (diameter approximately 30 cms.). Each contained a layer of slag particles and charcoal on its floor, with the collapsed remains of the clay superstructure. As reconstructed the furnaces would take the same form as at Levisham, with a clay dome pierced by a Tuyere or draught hole at the side and a vent-hole at the apex of the dome. The excavator considered the furnaces to date from the third or second centuries B.C.

Closer in date to the Levisham furnace is the example at Catcote, Cleveland (3), dated by coarse native pottery similar to that from Levisham as well as some Romano-British material. The Catcote example was within a hut, as at Levisham.

CHAPTER 6 : REFERENCES

1. Coghlan, H.H., 1956 'Prehistoric and Early Iron in the Old World' Pitt Rivers Museum Occasional Papers in Technology No. 8.

2. Jobey, G., 1962 'An Iron Age Homestead at West Brandon, Durham' in Archeologia Aeliana, 40.

3. Challis and Harding, loc. cit. p. 16

CHAPTER 7 : ENCLOSURES 'E', 'F' and 'G' (Fig. 17, 18)

Enclosure 'E'

The bracken covered banks and ditches of Enclosure 'E' are still clearly visible both on the ground and from the air at SE 830921. It is associated with linear dyke L6A which runs along its western rampart. Stratigraphic evidence for the relationship between the two features is lacking, but an examination of the surface evidence suggests that the enclosure post-dates the dyke, abutting it very closely on the western side. The northern ditch of the enclosure runs into the linear ditch; on the south side the place of the ditch is taken by Pigtrough Griff, a natural gulley usually dry but filled with up to a metre of water after rain or snow-melt. The ramparts are spread to an average of 3.3 metres in width and stand some 75 cms. high. The northern rampart measures 43 metres from east to west, with a slight change in alignment half-way along its length; the eastern rampart is of almost exactly the same length, but is pierced by a simple causeway entrance set centrally, and facing down the griff.

A section was run from the interior of Enclosure 'E' westwards into the rampart (section E1). This was continued (as section E1A) into the ditch of the linear dyke, although the two parts of the section were not directly linked. The ditch of the linear feature proved to be 2.5 metres wide, rock-cut (at the cost of great labour) and flat-based. There was a considerable depth of grey clayey silt, over which was a layer of brown sandy soil studded with occasional stones. The upper 30 cms. of fill was of peaty humus. In two places, distinct layers of hard iron pan had formed. There is no real indication in this sequence of anything other than natural silting; although the brown stoney deposit might represent backfilling, it cannot be demonstrated without evidence from any bank which might survive. Unfortunately, there were no finds.

The eastward trench explored the interior of the enclosure. The natural clay bedrock was encountered beneath 60 cms. of turf and topsoil with a deposit of iron pan directly overlying the

natural surface. Two post-holes or small pits were encountered, though trial holes elsewhere in the interior failed to produce any further evidence of occupation.

A small trench, section E2, was cut across the northern ditch terminal of the enclosure entrance. The ditch was U-shaped in section, just over a metre deep and, unlike the linear ditch, did not penetrate into the rock. A series of silts filled the feature almost entirely. There were no finds.

Apart from a few small sherds found in the post-holes, which cannot themselves be related to the earthworks, all of the finds from Enclosure 'E' are from trench E1 in a context of little stratigraphic value. In addition to the roughly-made 'native' pottery, which was all that was found in Enclosure 'D' a few metres to the west, Enclosure 'E' produced sherds of unmistakeably Romano-British wares, including part of an eroded buff mortarium and sherds considered to have been of Crambeck type, third to fourth century in date. The finds are unfortunately not now available, and the date seems startingly late. Since so little of this enclosure was explored, there remains a strong possibility that future work might illuminate both the date and the function of Enclosure 'E'.

Enclosure 'F'

Enclosure 'F' is adjacent to 'E' on its south side, separated from it by Pigtrough Griff. It was considered by the excavators to have been a field, and no excavation was undertaken. The enclosure is rectangular in form, with its long axis aligned roughly east-west: the western end appears to abut the linear dyke L6A in the same way as does the western rampart of Enclosure 'E'. It is possible that this is a relic of a rectilinear field system, similar to that south of Howdale Griff, which in the area of 'F' has been substantially destroyed by the much later agricultural activity which produced the rigg and furrow between Pigtrough Griff and Little Griff.

Enclosure 'G'

A large, roughly kite-shaped enclosure, its south side lying along the head of Dundale Griff, was designated Enclosure 'G', although no excavation was attempted. There is a possible entrance to the north-west. The enclosure differs in nature from the others, and certainly is a stock enclosure of mediaeval date. It lies immediately without the mediaeval open fields, at the end of Braygate Lane, and is one of the enclosures referred to among the bercaries and vaccaries described in mediaeval grants and charters (Appendix F).

CHAPTER 8 : ENCLOSURE 'H' and SITE 'J'

Enclosure 'H'

Enclosure 'H' (SE 838920), not shown on Ordnance Survey maps but clearly visible from the air, is a small, almost square enclosure lying the better part of a kilometer to the east of the main group of enclosures, A, B, C, D and E. Its position is halfway between the watercourses of the Levisham Beck (Horcum Slack) to the east and Water Griff to the west, on a raised saddle of ground known as Horness Rigg; the two watercourses confluve a little way south-east of the site.

Enclosure 'H' was described by the Reverend G. Young in his 'History of Whitby' written in the early nineteenth century. He mentions 'a small Roman camp on Levisham Moor', probably Enclosure 'A', and describes also another enclosure which appears to be 'H'; 'another camp, nearly square, being 190 ft. by 150 ft., situated on the south end of a ridge or low hill, near the Hole of Horcum.....it has now been lowered at the upper part to make it level, so that the ground next adjoining on the north is higher than the camp. On each side is a steep declivity which seems to have superseded the use of walls; or perhaps, though there are no stone ramparts, the place may have been fortified with wood. The principal entrance has been from the south, where we find traces of a road winding up the hill. On the east of the camp, along the verge of a steep cliff, we find a number of pits, similar to those a Scamridge'.

When inspected by the excavators in 1957, Enclosure 'H' was still clearly recognisable from Young's description. The northern side has the aspect of a lynchet sloping down to the interior. Marked points of dissimilarity between Enclosure 'H' and those at 'A', 'B' and 'C' are the decidedly angular form of the corners of the isolated enclosure, compared to the more or less rounded corners of the enclosures of the main group, and the less massive nature of the enclosure bank.

A small trial trench was cut inside the enclosure, near the centre, in 1957. No drawing of the excavation is available, but up to 30 cms. of topsoil are recorded as having been removed

to expose an area of stone which appeared to have been laid on purpose for a pavement. Pottery was recovered, both of the coarse, vesicular, hand-made 'native' type and of Romano-British fabric. In the opinion of the excavator, all of the material would be at home with a date between 70 and 100 A.D. - a date-range which appears well in accord with that of the main group of enclosures on Levisham Moor. However, the excavator also recorded the opinion that the occupation or use of the site continued to the fourth century A.D.; why he thought this is not at all clear, as there does not appear to have been any dating evidence other than the five sherds of evidently late first century pottery.

Although the internal area of Enclosure 'H' approaches that of 'A', very little exploration was carried out; there is little evidence of date and virtually none of function. The excavator's initial impression that this was a paddock or cultivation plot may have justification but equally the enclosure may have defined settlement. The trial trench excavated, very small in size, did produce an appreciable quantity of pottery, and even with so little evidence one may suspect that the density is rather high to have resulted from casual loss or manuring. The evidence of the possible pavement remains enigmatic.

Site 'J'

Site 'J' (SE 838917) on Levisham Moor was represented not by an enclosure but by a heap of metallic slag, lying on the west bank of the Levisham Beck immediately below its confluence with Dundale Griff and Water Griff, at the foot of Horness Rigg. At a depth of 30 cms. within the dump was found a large sherd of a mediaeval pitcher of the thirteenth or fourteenth century; it seems therefore most unlikely that this particular dump has any connection with the first-century metalworking on the moor. Such heaps of metallic slag are not uncommon in the area, and represent activity over a long period of time; others are certainly to be found on Levisham Moor.

APPENDIX A : POTTERY AND OTHER FINDS FROM THE LEVISHAM MOOR ENCLOSURES (Figs 19-25)

Pottery

The pottery from Enclosures 'A' and 'B' was sorted and classified between 1958 and 1964 by the late Godfrey Duke, assisted by J.G. Rutter. In 1982 it was drawn by R.H. Hayes, who at the same time extensively revised the original report to take account of fresh comparative material which had become available, notably from Costa Beck and from the Ryedale Windypits.

All of the native pottery is hand-made and more or less irregular in shape. The firing is often poor and the paste badly prepared, resulting in a laminated fabric which had a tendency to fall apart on excavation. The profiles are generally weak and slack, and lack a definite shoulder; in some cases the irregularity of shape make it difficult to determine the original form of the pot.

Large grits are generally absent. The commonest binding material is calcite, but other inclusions range from clay to ironstone, quartz, a form of spar and a small flinty pebble. The calcite was often reduced out by firing, and the quartz by weathering, leaving a pitted, vesicular surface. Many sherds were coated with a black, sooty material which derived either from the original firing or from later contact with cooking fires.

A great variety of rim forms is represented. Square topped, upright and everted rims of both large and small vessels are most numerous (nos. 1, 8, 9, 17, 31, 49, 57 etc.), but the range extends from simple upright stubs (e.g. no. 5) to such complex forms as no. 19. The vessel forms are usually higher than they are wide - 'cooking pots', storage jars and bowls - with only one example of a flat dish in a native fabric. There is a small quantity of wheel-turned Romano-British pottery.

It is likely that all of the native pottery on such small sites as those at Levisham was made at or near the actual site; there is, at least from the northern area, very little evidence for specialist production of this sort of pottery. No kiln was of course found at Levisham, but the pottery is likely to have

been fired in a simple clamp or bonfire. No recognisable waster was found, but with such badly-formed vessels it is unlikely that these would be distinguishable. An assessment of the Levisham material, by Mr. Weatherhead of Scarborough Technical College, indicated a firing temperature of approximately 700° - 750°C.

There are very few decorated sherds, ornament being confined to the cabling or thumbing seen on the rims of vessels nos. 2 and 3; this is a feature with a long prehistoric pedigree and which can be seen to continue well into the Romano-British period.

The general absence of diagnostic features makes dating of the Levisham pottery very difficult. The Romano-British material from Enclosure 'A' can be dated between the late first and the mid second centuries A.D. (though J.G. Rutter thought that some scraps of pottery from 'C' were as late as the third to fourth centuries); the native wares however would be equally at home in the third century B.C., or earlier, and in the later Roman period.

Pottery from the Enclosures on Levisham Moor

	Rims	Bases	Handles	Lids	Wall Sherds
Encl. A & C	75	23	2	1	736
Encl. B	128	40	1	1	875
Encl. D	3	1	0	0	60
	206	64	3	2	1671

Final total of sherds 1946.

Iron

Four objects of iron were found, including a piece of a horseshoe, badly corroded, and a probable lynch-pin both from Enclosure 'A'.

Lead

Two fragments of lead were found, one a spindle-whorl from

Enclosure 'C'.

Flint

Two retouched scrapers were recovered, from Enclosures 'A' and 'B'. 18 unworked flint flakes came from Enclosure 'A' and 28 from Enclosure 'B'. Any or all of the flint may of course be residual from earlier activity, and unconnected with the enclosure phase.

Glass

A fragment of glass bangle or armlet was found in Trench B3A, Enclosure 'B'. It is of transparent, pale blue-green material decorated with three parallel blue and white inlaid cables extending lengthwise. It is and example of a Type 2 glass armlet (1), which is described as of a blunted triangle in section; transparent glass possessing inlaid cables, generally in white and blue, running lengthwise and occasionally similar spiral spots. The distribution of these (2) is predominantly south Scottish, but a number have been found in the northern counties of England (especially Northumberland, but also examples from York) and at least two are known from southern England.

A parallel to the Levisham specimen, with three cables, is from the Hyndford Crannog, Lanarkshire (3). Kilbride-Jones assigns all of his three types of bangle to the late 1st and 2nd century A.D. and this period would agree with the probable dating of the pottery disclosed by excavations in the Levisham Enclosure 'B'.

Stone

Stone finds included two bun-shaped spindle whorls, and two hones or whetstones of fine-grained sandstone. Six quern fragments were recovered, notably from Enclosure 'B', these are generally the lower stones of rotary querns, although some fragments may be from flat or saddle querns.

APPENDIX A : REFERENCES

1. Kilbride-Jones, H.E., 1938. 'Glass Armlets in Britain' in Proceedings of the Society of Antiquaries of Scotland, LXXII.

2. Stevenson, R.B.K., 1956. 'Native Bangles and Roman Glass' in Proceedings of the Society of Antiquaries of Scotland LXXXVIII.

3. Stevenson, op. cit., Fig 1 no. 10

POTTERY FROM ENCLOSURE 'A' : References are given at the first mention thus: Stanwick (4). 12/29 indicates fig. 12 no. 29 in the report referred to.

(Figs 19, 20)

1. Large jar: exterior sandy buff, interior grey to black. A plain flat-topped rim, pitted on both sides but smoothed. From trench A6. Cf Gt. Ayton Moor (1) hut rims 3 & 5; Costa Beck (19) 6 no. 10; Grimthorpe (12) 8/25. This type survived as the Neckless Cook-pot found in the 4th - 5th century A.D. Signal Stations (3).

2. Rim of bowl; grey exterior, brick-red interior and core. From trench A7. Incisions or slashings on rounded lip. Protruding grit (clay, ironstone) gives it a lumpy exterior. Stanwick (4) 12/29; Traprain Law (5) 55/1. Another example from Thornton Dale (19) 51/9.

3. Rim in hard unpitted, finely gritted ware with dark grey exterior. Cabling or finger-tipping on top. No. 8 is similar, both may be paralleled by Traprain Law, 56/16. From trench A6.

4. Dark grey to buff, grey exterior, pitted upright rim with flat top. Dark interior with 'brush' marks. Cf. Langton (6) Fig. 7/27. See No. 86 from Site D. From trench A6.

5. Upright rounded rim, slightly folded over, exterior soapy buff to light grey interior. This type occurs at Stanwick, Traprain Law, Great Ayton Moor and Greaves Ash, Northumberland (7). From trench A6.

6. Rim; pink to black interior, grey exterior, well pitted rounded lip. Cf. Costa Beck (8) No. 5a; Traprain Law 55/8. From trench A4 C.

7. Rim of small jar, black to light grey exterior, black interior, fine grit. This may be from a small situla type jar of superior fabric and manufacture.c f Grimthorpe, 6/1 or

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Costa Beck (19). From trench A7.

8. Rim in grey pitted ware, slightly everted with square lip, cabled. c.f. Nos. 3 & 31. From trench A4C.

9. Rim in soapy grey with buff interior, very irregular shape. Smaller version of No. 49. From trench A5.

10. Two pieces of the rim and shoulder of a bowl, grey to buff; very pitted, though smoothed, interior with tool marks. Sooted. From trench A7.

11. Rim in hard stoney ware, sandy buff interior, black exterior and core. c.f. Costa Beck (19) 5b & 19. From trench A8.

12. Curious rim in dark grey corky fabric. Note thin walls in relation to rim. c.f. Stanwick 12/1; Traprain Law 55/10. From trench A6.

13. Rim with sandy buff interior, light grey exterior, pitted; may belong to same pot as No. 14. c.f. Langton (6) 7/43-4. From trench A4C.

14. Part of rim, brick red, ironstone grit. Rounded lip with internal swelling and concave seating diameter 7 in., very like Stanwick 12/1; Langton 7/40; Traprain Law 55 or Costa Beck 1/8. From trench A6.

15. Rim of large storage jar. Brown to grey interior, black, finger-smoothed, brush or tool marks, pitted in places but not much grit showing. Base No. 26 may belong though much of body is missing. A 'Halstatt' profile; good native ware. From trench A6. c.f. Thornton Dale (8) No. 9; Crossgates (9) type 9a; Scarborough I.A. site (10) p189 No. 29; Ashberry Windypit (11) No. 21.

16. Sandy buff to light grey. Corky ware, large diameter.

From trench A4C.

17. Everted heavy square-topped rim, smoothed and slightly pitted. From trench A4C.

18. Rim of large jar, grey exterior, sandy buff interior. From trench A8. c.f. Costa Beck No. 3.

19. Heavy rim, black exterior, orange buff interior, upright rim with concave seating. An applied band immediately below lip. Unique on local sites but vaguely reminiscent of some Traprain Law sherds. From trench A6.

20. Rim of bowl? Light grey to pink interior and exterior with internal swelling. From trench A6.

21. Rim of large jar or bowl, dark grey heavily pitted, broad flat rim shaped with a flat tool. Angle of rim uncertain. From trench A7.

22. Rim of bowl in similar ware as above. Badly laminated. From trench A7.

23. Rim in light grey to brown, pitted. Everted rim with external concave lip. Another unique form. c.f. Traprain Law. Fig. 55/3 & 56/19. From trench A4C.

24. Dark grey to sandy buff, slightly kicked-out base. c.f. Stanwick 43/33. From trench A6.

25. Complete base in sandy buff. Might be part of No. 15 (see 19, Fig. 49/1) From trench A6.

26. Flat base sherd, brown exterior and interior, grey core. From trench A4C.

27. Several pieces of the same vessel - probably had loop handles.

Rim is orange-buff both sides, smoothed though pitted. Crudely and unevenly made. Rim similar to Stanwick 12/4. From trench A8.

28. Rim of cook-pot, stony unpitted ware, dark sooty exterior, buff interior, ironstone and quartz grits.

29. Rim, handle and base sherds of same pot - a loop handled jar of I.A. type. Early examples from Rainsborough, Northants (17). p. 289-90. Fig. 33. Langton Fig. 7/47; Thornton Dale (19) Fig. 51/4. Fabric as No. 27 with kicked-out base.

30. Two loop handles in sandy buff, with black interior very pitted and moulded into the vessel, not countersunk. From the SW ditch, trench A8.

31. Rim, dark grey exterior, lighter interior, upright rim with thumbing or cabling under lip.

32. Doubtful type, grey brown exterior, pink to buff interior, rounded edge, corky and pitted, large grits, diameter uncertain, could be shallow platter or lid. From trench A6.

33. Not described.

34. Light grey rim, sandy interior, rounded lip. From trench A7. c.f. Costa Beck Nos. 7 & 20. 1977.

35. Heavy rim of large jar. Light grey both sides, chamfer on lip. Large lumps of calcite grit, entirely unpitted - a rather unusual ware at Levisham. From trench A9B.

36. Rim of everted jar. In finer ware than other potters', pitted, corky fabric with a rounded lip. Wheel turned? Thought at first to be as late as the 3rd century A.D., but see

Grimthorpe Fig. 7/12.

ROMANO-BRITISH WARE FROM ENCLOSURE 'A'. Fig 20

37. Mortarium, restored in the drawing from 5 pieces found in trench A4C. Coarse sandy orange, on both sides, patchy grey core, assumed spout missing. Clay ironstone & quartz pebble grits. c.f. Langton 7/11 for shape of rim only. Gillam (20) type 240-44 in use 0-150 A.D. Also found in native hut at Crag Bank Wood, Kildale (13) p. 65. No. 7, together with sherds of native gritty ware and flat and bee-hive type querns.

38. From ditch section SE of Enclosure 'B' (trench B2). Half of a 'pinched out' handle. Dark grey exterior and interior with a pink core. Very fine crystalline grit. Fabric appears later than the native pottery.

39. Rim and side fragment of straight-sided dish akin to Crambeck (14) type 2. Dark grey with orange core. From A7.

39a (not drawn). Rim and side of native shallow dish with thick walls (11mm), diameter uncertain. Calcite gritted imitation of No. 39. From trench A8.

40. Spindle whorl made from a piece of decorated Samian ware, glaze almost flaked away. From trench A16 W in post-hole on rampart. Other Samian pottery and Romano-British coarse wares have been found on Levisham Moor (15).

POTTERY FROM ENCLOSURES 'B', 'C' & 'D' (Figs 21-24)

41. Large bucket-shaped vessel, very coarse, badly laminated, orange-buff exterior, darker on top, dull grey-brown inside. The rim is very eroded and the profile doubtful. There appears to be a lining of grass or vegetable material inside, though this may be the result of its lying in peaty water. Sealed by iron pan in a trial hole. Almost certainly a storage jar, similar

to Traprain Law 56/17 and an example from Eldon's Seat, Devon (21) 15/96.

42. Another large storage jar, found sunk into sandy sub-soil close to Hut I (trench B9) in September, 1962. See note (16).

43. Rim of jar used for cooking. Buff with sooted exterior. Everted rounded rim with pitted fabric. From trench B1. c.f. Stanwick 12/15; Ashberry Windypit 9 & 9a.

44. Rim in corky fabric , dark grey exterior, sandy grey interior, black core. Everted with flat top. From trench B3a. c.f. Crossgates Fig. 11 No. 9a/2.

45. Rim of similar type, corky-grey to buff. c.f. Costa Beck (21) and Ashberry (7). From trench B3a.

46a Rim of wide-flared situla type. Pink exterior to black interior, thin walls - unpitted. Ironstone grits. Diameter 18 cms. Drain B3.

46b Restored from 7 pieces, possibly a lid but it has a slight curve to the body, and is probably from the same vessel as 46a. Exterior dark buff, protruding quartz grit and ironstone. Unpitted interior, smoothed and burnished with tool-markings. Survival of Early Iron Age type (see Rowntree (10) Fig. 21 25/27; & Grimthorpe 7/2, 8/32). From trench B10.

47. Rim and side of small dish in dark grey fabric. Internal horizontal brush marks. Another example of the use of this type at Levisham. From trench B3A.

48. Club-like rim, thick body, grey exterior, buff interior. c.f. Enclosure 'A' No. 15; Costa Beck 1976, No. 18. From trench B3.

49. Rim with round everted lip, sooted, buff exterior, dark interior. c.f. Stanwick 12/24. From trench B6b.

50. Similar type but with flat-topped rim. Tall jar in dark grey to coffee brown interior. Very pitted and cracked, brush marks, B1 ditch. c.f. Stanwick 12/15, Costa Beck 1976.

51. Rim of small jar with rounded lip, orange buff to dark grey interior and core; smoothed. Several smaller rims of this type were found. B1 ditch section. c.f. Stanwick 12/11.

52. Rim of large jar, sandy-grey exterior, brown interior, grey core. c.f. Langton 7/35. From trench B1.

53. Grey flat-topped upright rim. From trench B3A.

54. Heavy rim of storage jar, black exterior, coffee brown interior, very large pieces of stone in fabric.

55. Black exterior, interior buff to dark grey. Pitted and eroded. From trench B3, drain of Hut II. Probably the same vessel as No. 54; also found at Langton.

56. Part of heavy square rim, dark corky buff ware. c.f. Langton fig. 7/37. From trench B3A, under the floor of Hut II.

57. Piece of flat-topped rim, dark grey exterior and interior. c.f. Stanwick 12/11 and Rainsborough 30/146. From Linear ditch D2.

58. Rim of bowl? in buff ware. Acutely everted rim. May be a native copy of Reeded Bowls of the 1st century A.D. See Malton fig. 15/11, 15,16. From trench B1.

59. Rim of jar in dark grey to brown ware, pitted rough exterior, hand-made, thought at first to be of later date but see Grimthorpe 8/28 & 31. From Hut II, trench B3A.

60. Base, buff exterior, dark interior, splayed-out foot. From trench B9.

61. Part of base and wall sherd, orange to sandy buff exterior, grey core and interior; slightly splayed. From Ditch Section B2.

62 & 69 are examples of a thin tapering lipped and thick-walled type of Iron Age cooking pots. They occur at Grimthorpe 6/1; Rainsborough 33/182-3; Ashberry Windypit; and Costa Beck in grey flaky ware with fine grit. Some are very sooty cooking pots, though No. 63 may be a Stanwick type bowl. From B3 drain.

63. See No. 62.

64. Also a possible bowl; heavy clumsy body with slight shoulder and tapering rim at acute angle, thick walls in comparison. Dirty buff with spar and quartz grits. From trench B6B, near Hut I.

65. Cooking pots, heavy dull grey with large quartz grits protruding from surface, sooted exterior with brush marks. Rounded everted lip, thick walls. From trench B6A. SE of Hut I.

66. See No. 62. Pink to red with grey core. Small internal bevel. Type as No. 62-3 or Crossgates type 4. From trench B6A.

67. Rim in corky dark-grey fabric, everted though much abraded. c.f. Crossgates type 2. From trench B9.

68. Rim, buff to black exterior and interior, pitted and cracked from use as cooking pot. c.f. Stanwick 12/24. From trench B9½

69. See No. 62. Rim in heavy dark buff, smoothed, everted rim with rounded lip. Unpitted version of Costa Beck 5a; Ashberry 5, etc. From trench B12.

70. Rim and body sherd of jar in dark buff, smooth exterior, very burnt and fire-cracked; internal tooling and deep pitting. Suspension hole in wall below rim. c.f. Langton 7/22 and 23, which were both holed for suspension. In Grimthorpe 8/23 it was

thought the hole was for a repair to the pot. From trench B6B. Near Hut I.

70a Brown corky fabric, buff to black exterior, hole 4 mm in diameter. This and 70b may be body sherds from strainers or lamps.

70b Orange-buff unpitted black interior, hole 14 mm diameter.

71. Rim of large pot in heavy dark grey ware, rounded lip, concave, with internal swelling. c.f. Ashberry 9 & 9a, Stanwick 12/23. From trench B9.

72. Heavy rim, buff to black, a coarse, uneven storage jar from trench B10. 15 pieces of this rim were found. c.f. No. 15, Enclosure 'A', Costa Beck 13/76, Thornton Dale (19) 51/7.

73. Rim in heavy thick grey ware with protruding grits, walls thick and sooted. From trench B6B.

74. Grey, flat-topped and upright. c.f. Gt. Ayton enclosure, internal ditch section 1. From trench B6B.

75. Rim in dark ware, wide and flat-topped with thin walls. Similar to Crossgates 1 Fig. 10/2. From trench B6 Hut I.

76. Hard dark grey, everted square topped rim. From Hut I trench B6B.

77. Part of base, black to grey exterior, brown interior. From trench B6B. This is an example of the plain unsplayed type of which 10 or 12 were found in Enclosure 'B'. The other 25 bases vary from corky brown to buff or grey and another 12 have splayed or kicked-out foot.

78. Rim, part of body and base of 'Brigantian' type jar. Corky fabric, light grey to brown exterior, darker interior; slightly pitted. A well shaped example. c.f. Stanwick 12/24;

Ashberry Windypit 2. From trench B6B.

79. Rim of medium sized jar in dark grey; well shaped rounded lip. From trench B14.

80. Similar rim in thicker ware, very sooty exterior. c.f. Crossgates 1/fig. 10, 4-8. From trench B12, Hut I.

81. Rim in heavy dark-buff, everted with rounded lip, unpitted. Variation of local type.

82. Jar in corky buff to dark-grey, fairly smooth exterior, rougher interior, black core with calcite grit, everted lip. From trench B9. This form had a long life from Early Iron Age to 3rd century A.D., when they were made at several local kilns including Norton and Knapton, usually in calcite-gritted or hard grey ware. See Langton Fig. 30, and burial urns from Norton in Malton Museum.

83, 84. Sherds from Enclosure 'C' c.f. Langton.

85. Fragment of neck of jar, also 10 gritted wallsherds from trench D4.

86. Rim sherd. Dark grey exterior, black interior, pitted and worn with brush marks. Upright flat-topped rim. From the spoil heap.

87. Rim of larger jar, upright flat-topped outbent rim. From pit Db, with 3 gritted wallsherds. Of a type found in Costa Beck, Spaunton, Windypits and Norton, also Stanwick.

88-88a Club rim and wallsherd with piece of iron slag adhering to it. Rough corky orange ware. From trench D4.

89. Flat base (restored). Slightly splayed at foot. Ware as No. 88. From trench D2 (1/64). Fragment of burnt bone and

heat-split red stone found inside this base. Associated were 44 wallsherds in the same ware.

APPENDIX A : REFERENCES

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16. A Romano-British storage jar was found sunk into the corner of a 4th to 5th century floor in Vicarage Garden, Norton in 1951 and is now in Malton Museum.

17. Avery, M., Sutton, J.E., and Banks, J.W., 1967. 'Rainsborough, Northants, England: Excavations 1961-5'. in Proceedings of the Prehistoric Society, XXXIII.

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APPENDIX B : ANIMAL BONES FROM THE SOUTHERN DITCH OF ENCLOSURE 'A'

A group of animal bones from the southern ditch of Enclosure 'A' was examined and identified by Ann Grosvenor-Ellis, using comparative material from the collection of the Institute of Archaeology at Cambridge. This note is based on her more detailed report.

Three species were represented, Ox, Horse and Pig. The cattle bones were all of Bos taurus longifrons, the 'Celtic ox' which appears to have been the native domestic cattle at the time of the Roman invasion, a small breed comparable with the Kerry of today. At least two, perhaps three, beasts were represented, one perhaps an immature specimen.

Horse was very sparsely represented, but it was estimated that the bones came from a pony of about 12 or 13 hands, comparable with a modern Exmoor.

Pig was represented by a single tooth.

APPENDIX C : REPORT ON IRON SLAG AND ORE SAMPLES FROM ENCLOSURE 'A'

Iron slag and ore were found widely distributed in and near Enclosure 'A' at Levisham. No actual slag-heap was discovered in the immediate vicinity of the site (but see the dump at Enclosure 'D' and the mediaeval evidence from Site 'J'). Samples from within the fills of the southern ditch of Site 'A' and from Site 'D' were collected for analysis, and grateful thanks for the following report are due to Professor A.G. Quarrel and Dr. A.E. Currall.

Sample no.	1	2	3	4	5	Site D (furnace)	
SiO_2	83.26%	41.04%	39.52%	12.94%	28.98%	1.46%	23.0%
Fe_2O_3	4.38	42.30	52.60	77.70	54.60	-	-
Al_2O_3	5.83	5.03	3.11	9.33	4.30	1.7	2.6
CaO	0.10	2.70	2.00	0.10	1.90	1.4	1.5
MgO	0.22	0.94	0.71	0.36	0.58	-	-
MnO	0.10	5.64	5.17	0.66	3.51	7.6	0.5(MnO_3)
P_2O_5	0.30	0.53	0.44	1.00	0.68	-	-
TiO_2	0.40	0.28	0.33	0.28	0.23	0.1	0.4
Loss on ignition	3.50	1.60	(3.48+)	(1.38+)	5.68	-	-

There is some uncertainty about the state of the Iron in the samples. In the above Table the Iron is quoted as Fe_2O_3 but the fact that samples 3 and 4 did not lose, but gained, weight on ignition suggest that some of the Iron may be in the ferrous state. In view of this uncertainty the metallic Iron content of the specimens is given below:

	1	2	3	4	5
IRON	3.07	29.60	36.86	54.45	38.25

Samples 4 and 5 were highly ferromagnetic, suggestive of the presence of Fe_3O_4.

Observations on samples 1 - 5

1. The analysis (high silica and low iron) suggests that this may have been part of the material used to build the furnace. Certainly it has not been melted in any ancient bloomery.
2. This is a slag and there is evidence of gas blow-holes. The material has probably been pasty rather than fluid.
3. This specimen has the appearance of a slag that has been molten.
4. The composition and appearance of this sample are strongly suggestive of it being an ore rather than a slag.
5. An interesting feature of this specimen is that there are a number of impressions with a 'woody' appearance. This may be a sample of ore partially reduced with charcoal.

From the composition of the samples it can be estimated that the liquidus temperatures are as follows:

1. 1550°C
2. 1400°C
3. 1350°C
4. 1200°C
5. 1100 - 1150°C

These estimates would probably be correct to + or - 50°C and the chief conclusion one can draw is that there is not necessarily any difference in the furnace used with samples 2 and 3. It is much more likely that the difference between their appearance as 'pasty' and 'molten' slag is due to the difference in liquidus temperature.

The location of the Enclosure 'A' is situated on the Passage Beds between the sandstones of the Lower Calcareous Grit and the oolitic limestones of the Lower Limestone of the Middle Oolites of the Jurassic System. These beds on the whole are not ferruginous to the extent of possessing useable ore. It is likely therefore that any ore material found has been brought from elsewhere.

Possible sources of iron-ore in the area are:-

a. Immediately west of Levisham along the side of Newton Dale are outcrops of the Cornbrash which here contains a 1.5 m band of fossiliferous limestone in which there is a ferruginous band. About a century ago this was worked for a short time near Skelton Tower, but the project was soon abandoned.

b. In Rosedale, some eight miles W.N.W. there occurs a 24 m thick band of the Dogger at the base of the Lower Oolitic Series. This is highly ferruginous and was used as a source of ore until the turn of this century. It carries a large part of the iron as Magnetite and is as far as we know the only area in which a magnetic ore is found in this part of Yorkshire.

Fox-Strangeways (1) quotes an average of a number of analyses of magnetic ore from West Rosedale as giving a total iron-oxide content of 58.48%, quite close to the average shown in the Levisham samples.

In view of the high iron content of the ores they are unlikely to be derived from the Cornbrash and their high magnetic properties make it almost certain that they came from the Rosedale area.

APPENDIX C : REFERENCE

1. Geological Survey, 1885. Geology of Eskdale, Rosedale etc.

APPENDIX D : POLLEN ANALYSIS OF SOIL SAMPLES FROM ENCLOSURE 'A'

In October, 1958, Professor G.W. Dimbleby, then of the Department of Forestry, Imperial Forestry Institute, University of Oxford, visited the site of the excavation of Enclosure 'A' and took away samples of soil for pollen analysis, from varying depths of the filled-in southern ditch and from the original land surface below the stones of the rampart.

Samples of charcoal also were taken for identification; that from near the bottom of the ditch proved to be mostly of willow with some oak, hazel and birch, whereas that from the upper layer, immediately pre-dating the final levelling of the ditch, was of birch and hazel.

Too much should not be read into the pollen figures, inter--esting though they are. They represent soil samples taken from only a single trench (A1A), most of the infilling of which proved to be too alkaline to preserve pollen grains at all well. Pollen deposition can vary widely with weather conditions (particularly the strength and direction of the wind) and the variety of plant. A larger number of samples would be required for a satisfactory picture.

The following is a precis of Professor Dimbleby's observations for which the authors are deeply grateful:-

Of the samples of soil from the original land surface some were too alkaline to preserve pollen grains satisfactorily due to the juxtaposition of the limestone. One sample, however, was just acid enough to have preserved the pollen reasonably well and this (Column 4) gives an indication of the flora of the area two thousand years ago. The vegetation then was essentially grass with weeds of cultivation, and there was a small quantity of cereal pollen. The area was completely deforested in the immediate locality and for a considerable distance around - even hazel and birch scrub were lacking in quantity. The presence of bracken, dodder and the high Liguliflora percentage together might suggest that the land had been abandoned or was in the process of so being.

The hazel percentage of 4.5 in the original surface soil is probably more than one would get from the present surface; I have

no doubt that there is less hazel on the limestone today than in Roman times. Nevertheless the numbers are so low (hazel is a heavy pollen producer) that the moorland area was then about as treeless as it is now. It seems very likely that birch and hazel would be in the valleys, as now. However, it is very difficult to be sure, for a stand of hazel to the leeward of the site would have much less effect on the analysis than one at the same distance to the windward. In view of the ecological requirements of hazel I think it is unlikely that it extended beyond the valleys. It is interesting that the same percentage of hazel pollen was given in the upper sample (post-mediaeval) of the southern ditch.

Of the ditch samples, again, all except the uppermost proved too poor in pollen to give a worthwhile count. The sample from Zone A (Column A), 20 cms. below the modern surface and alone acid enough to have preserved the pollen well, being only a single sample cannot be interpreted with any real reliability. Perhaps the most significant points are that the trees are still very poorly represented and that the grasses greatly exceed the heather in pollen percentages. Indeed it may well be that the heather pollen has been washed down from the present vegetation, whilst the grass pollen presumably came from a phase in which cereals and weeds of cultivation are also recorded. In fact the higher values for plantain pollen suggests far more active cultivation at this time than in the 1st century A.D.

The very much higher amount of pollen in this upper ditch sample compared with that found in the original soil level (x 40) is proof that they are of widely differing age. The former gives a record of cultivation which took place after the soil had become sufficiently acid to allow the preservation of pollen in larger quantities. It is clear from the lack of pollen remaining in the lower ditch zones and from the absence of a significant layer of humus (peat) below the present heather that the latter is of comparatively recent origin, probably during the last century or so.

Heather, which now dominates the moor, will only flourish in acid conditions, on soil from which the lime, during a long period of neglect, has been leached out by rain.

LEVISHAM ENCLOSURE A

PERCENTAGES OF TOTAL POLLEN AND FERN SPORES.

NATURAL ORDER or GENUS	POPULAR NAMES	ORIGINAL SOIL from BELOW RAMPART			TRENCH A DITCH ZONES				
		1st Century A.D.			Mediaeval or later				
		1	2	3	A	B	C	D	E
Trees									
ALNUS	Alder	1.3			1.8				
BETULA	Birch	0.9			+				
CORYLUS	Hazel	4.5		+	4.5			+	+
FRAXINUS	Ash	0.9			-				
ILEX	Holly	-			0.5				
PINUS	Conifers	-			+				
QUERCUS	Oak	1.3		+	0.9				
SALIX	Willow	0.9			-				
ULMUS	Elm	-			0.5				
Flowering plants									
CALLUNA	Heathers	2.7			15.2				+
CAMPANULACEAE	Bell flowers etc.	0.4			-				
CARYOPHYLLACEAE SCLERANTHUS	Knawel	-			0.5				
CHENOPODIACEAE	Goosefoot, Orache etc.	-	+		-				
COMPOSITAE									
a. LIGULIFLORAE	Dandelion, Sow-thistle etc.	39.9	++	++	4.1	+++	+	+	
b. TUBULIFLORAE	Ragwort, Colts-foot, Groundsel etc.	-			0.9				
CRUCIFERAE	Crucifers	4.0			-				
CUSCUTA	Dodder	5.8			-				
CYPERACEAE	Sedges	-			0.5				
GRAMINEAE	Grasses	18.4			45.5	+	++	+	+
CEREALIA	Cultivated Grain	0.4			0.9				
PLANTAGO LANCEOLATA	Ribwort Plantain	2.2			15.0	+		+	+
PLANTAGO MAJOR	Great Plantain	-			0.5		+		
RANUNCULACEAE	Buttercups etc.	-			1.4				
SUCCISA	Scabious	-			+				
URTICACEAE	Nettles etc.	0.9			-				
VARIA		2.7			2.3				

Ferns etc.									
DRYOPTERIS	Buckler Ferns	2.7	+	+	0.9	+			+
LYCOPODIUM	Club Mosses	0.9	+	+	0.5		+		
POLYPODIUM	Polypodies	0.4			+				+
PTERIDIUM	Bracken	8.5	+	+	3.6				+
Absolute Pollen Frequency Grains per gram of soil		7136			281,600				

\+ Present but not counted
++ Relatively more than +
+++ Relatively more again but still low frequency

APPENDIX E : MEDIAEVAL LEVISHAM, LOCKTON AND DUNDALE

Levisham Moor lies on the northern end of a plateau of the limestone hills. It rises from the two villages of Levisham and Lockton, both at about 160 metres O.D. and separated by a deep, narrow valley 70 metres in depth. Known prehistoric activity is concentrated on the high ground above the villages, though this distribution is likely to be at least in part the product of mediaeval and later cultivation in the valleys. Roman settlement is indicated by a site in the Newtondale valley at Stonygate, where pottery of the third to fourth centuries A.D. was found with flue tiles and roofing tiles, indicative of the presence of a high-status building, perhaps a villa.

Levisham Church

St. Mary's Church, Levisham, set apart from the village and close to the Levisham Beck, has early origins boasting a Late Saxon chancel arch as well as considerable twelfth century work, though the external walls were almost entirely rebuilt during Victorian restoration. Several late Saxon sculptured stones stood in the chancel until their removal in 1977; another is built into restored masonry in the tower. Two stones, now in Lockton Church, were fragments of a grave-slab with the incised figure of a dragon. Following excavation by the York Archaeological Trust in 1977 the church now awaits a new use.

Levisham Village

The village is built around a large green, dominated by the Horseshoe Inn, with a pond at the northern end. No cottage displays external features denoting any great age.

The Domesday survey of 1086 refers to the village as Leuecun ('Leofgeat's Farm'). It was quite small, with two carucates and six bovates (approximately 350 acres) of arable land. When the manor was conveyed to Hugh Bigod, Henry II changed the tenure from socage to military service; Levisham was still held of the Honour of Pickering. The Bigods were a powerful family; Ralph Bigod was Earl of Norfolk, Marshall of England and Forester in Fee of the Forest of Pickering. In 1209

the second Ralph de Bulebec paid the King eighty marks and a palfrey for Levisham and for 'an iron forge in his wood there'. This is the first documentary reference to an industry which was to be of great importance to the area. In 1334 the Earl of Norfolk had at Levisham iron ore and a forge for which he paid two shillings per year; this very low rent was probably established at an early date and suggests an early origin for the forge. The ironworks are mentioned again in the pipe-rolls of Henry III, and it is known that by 1255 Bulebec had been in heavy arrears for this forge. In 1438-9 the ironworks were leased to John Percy, and even by 1661 the rent had only risen to two shillings and sixpence per year. Iron slag is found at Grove House near Levisham Station as well as on the Moor, and a pit at the end of Rhumbard Snout may be a result of the search for ore.

A water-mill, presumably for corn, is mentioned at Levisham in 1255-6 in a grant by Ralph Bulebec to Old Malton Priory.

In 1352 Sir John Melsa had licence to grant the manor to William and Isabell Percehay of Ryton, in whose hands it remained until 1406. After a brief period it passed to Sir Robert Percehay and descended with Ryton until Sir Robert's brothers sold their manors and the fostership of Blakey Moor to Sir William Compton in 1519. Sir William Percehay then re-purchased them; in 1572 they went to Sir Robert Stapleton who in turn sold them to Brian Boyes. In 1589 the manors were sold to the Etheringtons who were still in possession in 1716 (Malo Cross was re-erected by Robert Etherington in 1621).

At the time of the enclosures (April 1771), J.W. Poad is described as 'Lord of the Manor'. At the same time Isaac Poad is described as 'Yeoman'. A free school at Levisham was founded by the will of John Poad in 1793.

The manor passed through various hands in the nineteenth century but manor court held from time immemorial ceased in 1924. The North York Moors National Park Committee purchased

Levisham Moor in 1976.

The three large fields of Levisham, mentioned in the Dundale charters, are still identifiable. Limpseygate lay to the east of the road of the same name to the north-west of the village, originally the main road to Saltersgate. Braygate Field lay to the west, its name preserved in Braygate Baulk. Little Field lay on the headland overlooking Newtondale. The location of the earliest settlement is a matter of doubt. Mediaeval pottery has been found in quantity in fields north and east of the church, but the isolated position of the church may simply be because it was meant to serve both Levisham and Lockton, and the pottery scatter need not indicate the presence of substantial settlement.

The extraction and working of iron ore was always important to Levisham. The age came to an end in the mid-nineteenth century when James Walker, Ironmaster of Leeds was Lord of the Manor (1816-74). In 1860 he sank a pit in the valley below Skelton Tower (the shooting-lodge of the Rev. Robert Skelton). The pit proved a failure, though a spur of the railway was connected to it. The ironstone was too poor even for nineteenth-century workings: water caused great problems and by 1866 Walker owed £11,000 on the enterprise.

Lockton Village

The village called Locketun in 1086, was one of several manors held by Ulchil, who had there five carucates of land for four ploughs. Ulchil's manor passed to the family of Boie (Boyes) the Foresters-in-the-Fee (the name is derived from the Norman-French for woodman). With Alan of Kingthorpe, William Boie rendered account of the Royal Forest in 1165.

In the thirteenth century the manor was associated with the family of Malcake, who gave to Rosedale Priory a grange and a pasture. Between 1241 and 1250, Geoffrey Malcake gave a house, four tofts and fourteen oxgangs to the Knights Templar; the house is remembered in the name Temple Garth.

The Forest of Pickering had a considerable influence on Lockton as well as Levisham. Five houses in the village, described as 'in the heart of the forest', are mentioned in the

Duchy of Lancaster records, and there was an edict that every house should give a hen in return for a load of firewood. By the seventeenth century some households were refusing this fee, and the Foresters complained of 'the destruction of her Majesties Woods'. It appears that the monarch did sometimes hunt the area; in 1323 Edward II stayed at Lockton and paid five pounds for netting ropes. During the Middle Ages concern was often expressed and measures taken to prevent damage to the woods by domestic animals.

Little remains of ancient buildings in Lockton. It is known that in the early fourteenth century, Edmund de Crauncester was given twenty-eight oak trees from the forest to build a house, which must have been quite an imposing structure. A few cruck-built houses remained in the village until at least the end of the nineteenth century. The old Manor House, which stood at the north-west end of the village until 1920, had three pairs of crucks. On the north side of the main street one cottage, Oak Crag, has renovated crucks visible, and others were recently removed from a barn at the north-east end of the village. The church of St. Andrew (or of St. Giles, the original dedication being in doubt) dates from the thirteenth century, with a tower added in the fifteenth century. Four carved stone heads on the walls of buildings at Square Farm may originally have been parts of the church.

The open fields of Lockton (East, West and Wedland) were enclosed between 1678 and 1793. In the late seventeenth century, freeholders held fractional shares of the manor, and in 1697 they joined to endow a deep well, still visible on the south side of the village street.

Non-agricultural activities in mediaeval Lockton are suggested by a reference in 1301 to a 'collier', in this case probably a charcoal burner whose trade was connected with the iron industry. Lime kilns and quarries were active into the present century. A large rabbit warren south of the village formerly supplied meat and skins (largely for hats): other rabbit warrens are visible as 'pillow mounds' at Rhumbard Snout.

Dundale

Dundale called Limstiegait in 1590, is a shallow valley running from north-west to south-east from a height of 150 metres O.D. to some 215 metres at the foot of Horness. At the point where Limpseygate crosses this valley, at SE 828918, is a large artificial pond made by damming the tiny flow of water, necessary for the watering of stock where the springs are insufficient to maintain a constant flow.

At the west end of Dundale a large, kite-shaped enclosure ('G') lies athwart the valley, mostly on the south-facing slope at SE 826920. It is bounded by a stone-walled bank 4 metres wide, with an outer ditch about 3 metres across. The enclosure measures roughly 250 metres from east-west and 160 metres from north to south, with a gap at the north-western corner. The southern bank is hard to delineate, merging into the stream and the embankments of the other enclosures, once bounded by dry-stone walls. This group of enclosures appears to be related to a series of earthworks not of prehistoric or Romano-British date, identifiable as the remains of mediaeval fields: the dyke L9 from Braygate Moor to the head of Dundale bounds an area of rigg and furrow to the east; more rigg and furrow can be seen at the north end of the present enclosed fields on the side of Newtondale, where it is again bounded by a considerable earthwork; there is a probable field on the north facing slope of Dundale at SE 830919; 'old banks' are shown on the six-inch Ordnance map of 1854 and a map of 1855 by Knox.

It seems almost certain that these features in Dundale are the remains of the Malton Priory grange and vaccaries, which may be compared with a similar complex at Rudland Close. It may be presumed that the flimsy(perhaps turf-built) shelters of the stockmen are close by. The mediaeval rigg and furrow is likely to be the lands mentioned in a grant by the Bulebec family of 52 acres of cultivated land, unnamed by almost certainly Braygate and Limpseygate.

More of a puzzle must be the area of rigg and furrow visible north of Enclosure 'G', over Dundale Rigg, and east of Enclosure 'A'. Nor can it be said to what date belong the curious

earthworks L7, L14 and L15, although all are probably mediaeval.

APPENDIX F : DUNDALE AND LEVISHAM MEDIAEVAL CHARTERS

Based on notes kindly provided by Professor B. Harrison, University of Leeds.

1. B.M. Cott. C1 DX1 F 116r. (Grant by Ralph de Bolebec to Malton Priory of 52 acres in the territory of Levisham) - "Twenty acres lie between my culture of arable land and the fosse towards the north and between the roads extending towards the moor in a place called Dundale; 29 acres on the west side of the west road. (This is certainly between Braygate and the escarpment towards Newtondale). The Canons may use the land as they wish. Also pasture sufficient for 1,000 sheep and 120 other beasts commoning everywhere in the pastures of Levisham, and in all other pastures in those parts in which I have common both of wood and plain and waters, wherever my demesne beasts have common. I also grant sufficient sustenance in the woods of Levisham for building houses in the same territory and making enclosures. Also turf and heather sufficient for the needs of those who stay there. Also forage for winter in the common pasture for the said sheep and beasts wherever I may take it in the time of forage. They may also make folds in my woods and pastures around my sheep for protection from foxes and wild beasts".

2. Do. f 116r-117v "To Brian de Insula, justiciar of the forest. Walter Boye & Alan de Kinthorp foresters in fee &(3 names) of verderers of the forest & (10 names) regarders. We have viewed the land and pastures that Robert (Ralph?) de Bolebec gave to Malton.....it contains 52 acres and these are within a certain ditch which runs round ('circuit') the field of Levisham and outside the covert of the wood. And the becary of the Prior is within the ditch (fovea: perhaps earthwork L9) which runs round the field of Levisham and is outside the covert of the wood. It is thus not to the damage of the forest if the King confirms the said land and pasture to Malton. The pasture can sustain 1,000 sheep".

3. Do. f 117r. Grant by Leo son of Saloman the Jew of Lincoln to Malton. Grant by Ralph de Bolebec in his land and pasture of Levisham, i.e. pasture for 500 sheep and 120 beasts, 20 mares and young of 3 years, 3 stallions, site of bercary and beasthouse

- i.e. "32 acres of uncultivated land within the field to the north, from all the debts he owes me.....".

4. Another agreement between Ralph & Malton 1239.

5. Do. f 117r. Obligation from Ralph de Bolebec"to defend Malton from waste of wood in Holcumbe in the territory of Levisham". (Apparently their sheep or beasts were straying into Horcum).

6. Do. f 117r. Grant by Randolph de Bolebec to Malton of the mill of Levisham, with all the suit of Levisham & Lockton & all the meadow on the south side of Levisham Church "and land which Adam my reeve held of me" etc.

7. Do. f 117r. Grant by Ralph de Bolebec to Malton of 3 cultures of arable land in Levisham, call Erewacroft, Erewraflat one and "the third lies between two roads next the Canons' enclosures of Dundale. Also the culture called Uplencches which lies between Erewacroft and the enclosures of Dundale".

8. Deals with the mill and lands in Levisham, and with Adam the reeve and 1 bovate he held in villeinage. Ralph enfeoffed Malton of it in 1255-56.

9. Do. f 118v. Confirmation by William de Fortibus, Earl of Albermarle, of the gift of Ralph Bolebec to Malton of the mill and soke, meadow south of the church and a fourth part of 20 acres in 4 fields next to Dundale and 1 bovate Adam son of Walter once held, and of the gift of Ralph, father of Ralph Bolbec, of 42 acres of arable enclosed by a ditch "in a place called Dundale" and pasture for 1,000 sheep and other 100 beasts.

10. Confirmation of above, including a grant to the Canons, and their men of Levisham & Lockton, of free pannage for their pigs in the woods.

11-14. Four extracts from the NRRec Series dealing with the iron forge and mine and with charcoal burning in Levisham wood.

15-17. Deal with assarts in Staynthwaite (Staindale?) & Westcliff.

18. NNRec 2. P89. "John de Melsa, Knight, seeks to rent all the pasture in the woods called Rumbold, Lyngeweth & Yortfal which woods were once of Roger Bygot, Lord of Levisham". Granted for 5/- per annum.

APPENDIX G : CATALOGUE OF LINEAR EARTHWORKS ON LEVISHAM MOOR (Fig. 1)

(This gazetteer was compiled by R. Hayes, drawing on an earthwork survey compiled by J.G. Rutter and now kept by Scarborough Museum) Each reference is preceded by a combination of letters and numbers referring to Fig. 1 (nos. L1, L1A, L2 & L8 not shown).

L1. Gallows Dike. SE 8485 9412. A short length of dyke about 100 metres long, cutting the narrow ridge between Saltersgate and the Hole of Horcum. Its site slopes down to the east, to the Whitby-Pickering road, from which the dyke is clearly visible. It consists of a ditch between double banks. The condition is fairly good, except where it is cut by the old trackway from Levisham.

L1A. Thieves Dike. This bank and shallow ditch curves around parallel to the modern road above Horcum Wood from the corner of L1 and the Levisham track, along the 275 metre contour.

L2. Double dyke on Saltersgate Brow. This is a cross-ridge work at about 275 metres O.D., running for 1.2 kilometres from the edge of the brow to the head of Long Gill on the south-east. Its condition is generally good, though it is cut by an important ridge-way track and was ploughed on both sides in 1976.

L3. Horness Rigg. SE 8390 9275. A short cross-ridge dyke about 30 metres long, described as 'earthwork' by the O.S. It crosses the ridge at its narrowest part and consists of a ditch between double banks.

L4. West Side Brow to Broadhead Rigg. SE 831935 to SE 833933. A ditch between double banks which are still some 2 metres high. One length runs from West Side Brow to a point 120 metres south of Seavy Pond; it seems to turn to follow the west side of Howdale Griff, as a ditch and eastern bank. The ditch degenerates into a series of elongated pits, a possible sign of an unfinished state.

L5. SE 829932 to SE 831930. Runs parallel to and 400 metres south of L4. About 900 metres long, it extends from West Side Brow to the head of slight valley which is an offshoot of

Howdale. The western half is in fair condition, the eastern part poorer. It consists of a ditch between double banks.

L6A. SE 831924 to SE 833928. 500 metres in length, this earthwork is marked as a hollow-way on the O.S. Map. It runs from Howdale Griff to the junction of L6A and L6B and is a possible loop back, enclosing an oval area, shown on the 1854 edition O.S. map. Trial excavation, however, failed to confirm this.

L6B. SE 8327 9245 to SE 8300 9213. This dyke extends from the head of Little Griff to that of Pigtrough Griff, a distance of 450 metres. It is barely visible in good light as a faint ditch on the south slope above Pigtrough and may originally have extended over Dundale Rigg, having been possibly destroyed by later ploughing. Several partial sections of this dyke were obtained during the Scarborough Archaeological Society's excavations on Enclosures 'A' and 'B' (q.v.). It is better preserved towards the north and east.

L7. SE 8242 9282 to SE 8271 9215 (approx.). Fragmentary lengths only survive of what was formerly a very long (530 metres) bank and ditch, its south end much cut by rigg and furrow. It seems to have extended from the escarpment of West Side Brow to Dundale Rigg on the south side. Other earthworks have probably been destroyed in the area. Two small enclosures, L14 and L15, lie to the east of the dyke L7, but need not necessarily be associated with it. They may indeed be mediaeval in date.

L8. Far Black Rigg Dike. SE 841921 to SE 844919. A length of ditch between two banks about a metre high and three or four metres apart. It is cut by quarries at one end. The dyke runs north-west for about 300 metres towards the mediaeval enclosures, and forms a boundary to mediaeval rigg and furrow. This is probably the dyke mentioned in a Bolbeck charter of 1221-4.

L9. Braygate. A bank traceable along the line of Braygate may be taken to be a baulk or boundary of the mediaeval open field which ran alongside the lane.

L10. SE 8220 9183 to SE 8242 9196 A bank with a ditch on its northern side forms the northern boundary of the modern fields

west of Braygate; the bank survives to a metre high, and the ditch is 2 metres wide. It appears to have extended beyond the fields to the edge of the escarpment above Rhumbard Snout, the line followed by a footpath. This earthwork encloses rigg and furrow and joins an 'old bank' shown on the 1854 six-inch O.S. sheet, dividing the second field south of the moorland.

L11 and L12. Two minor dykes running between the northern limit of cultivated land and Dundale Griff are probably mediaeval in date.

APPENDIX H : BARROWS ON LEVISHAM MOOR

The gazetteer was compiled by Raymond Hayes. Nine 'tumuli' are shown on the six-inch Ordnance Survey map (Sheet SE 89 SW); another two are known to lie to the south in enclosed fields between Braygate and Levisham village, with others visible on aerial photographs.

Various finds from Levisham Moor which appear to have come from barrows are in the Yorkshire Museum. Two are food-vessels, one with stop-ridge of Yorkshire type (no. 1012) and the other of globular form (no. 1024). Two perforated axe-hammers, nos. 1090 and 1091, were thought to be from Levisham Common (Moor). Other, better provenanced, finds are listed below. Barrows are preceded by a number referring to Fig. 1.

1. SE 8446 9408. A heather-clad round barrow, 10 metres in diameter and surviving to 70 cms. in height, was identified and surveyed by Douglas Smith in 1978. The site is 330 metres west of Gallows Dyke and 50 metres north of the path from Saltersgate to Levisham village, overlooking the Hole of Horcum from a height of about 275 metres. Not on Map 1.

2 & 3. SE 832936. Two round barrows 10 to 11 metres in diameter and about a metre high; there may be a third. No. 3, the southernmost, has obviously been disturbed, and may have been opened by the Revd. Robert Skelton who in 1851 opened seven barrows on the Moor, finding in one 'a beautiful small stone axe and some arrow-heads beneath an inverted urn at the bottom of the tumulus'. The site was on West Side Brow, overlooking Newtondale. The finds from this barrow have recently been identified and discussed in detail (1).

4 - 9. SE 829932 (approx). A group of small cairns between linear earthworks L4 and L5. Only two are shown on the six-inch O.S. sheet. Two are particularly prominent and show this stone-built construction, apparently undisturbed. The cairns are between 3 & 5 metres in diameter and from 60 to 70 cms. high.

10. SE 832928. A well-defined round barrow 8 metres in diameter and 70 cms. high; dished on the top.

11. SE 828926. A round barrow 10.5 metres in diameter and 70 cms. high.

12. SE 827926. A small cairn 3.5 metres in diameter, 35 cms. high.

13. SE 826923. A small cairn, west of linear earthwork L7. 5 metres in diameter and 60 cms. high.

14. SE 822921. A large round barrow at the western end of Dundale. It is 17 metres in diameter and 1.3 metres high with a large disturbance at the centre.

15. SE 823921. Small cairn a short way east of No. 14.

16. SE 828918. Small cairn south-west of Dundale Pond.

17. SE 830919. Mound of earth and rubble, 10 metres diameter by 90 cms. high, disturbed at the centre. A local landowner in the 1930's called this feature 'the Pankin Heap' and said that when digging for rabbits he had found in it 'pankin collars', which may be the rims of urns. A trial trench cut in 1960 by members of the Scarborough Archaeological Society revealed a shallow pit, of 45 cms. diameter, which contained burnt stones, charcoal and scraps of calcined bone, but no pottery.

18. SE 833924. A round barrow 14 metres in diameter and 1 metre high, disturbed at the centre. It is constructed of sandy rubble and is much mutilated by rabbiting and by digging by a party of schoolchildren in 1960.

19. SE 832924. A small turf mound within the central area of Enclosure 'A'. This was examined during the excavations on Enclosure 'A' (q.v.) and, while not appearing to be a barrow, yielded no other evidence of date or function.

20. SE 833909. A large mound was shown on nineteenth century O.S. maps, but is said to have been levelled by a farmer. Skeletons in a stone-walled cist found during these operations. They were re-interred in a stoney mound, no. 21 (below).

21. SE 829909. A stoney cairn close to the junction of Braygate Balk and Braygate Lane. There is a local report that this was the site of the Revd. Robert Skelton's museum, but this seems unlikely.

APPENDIX H : REFERENCE

1. Pierpoint, S. and Phillips, P., 1978. 'A Grave-Group from Levisham Moor, North Yorkshire'. in Yorkshire Archaeological Journal, 50.

FIGURE 2

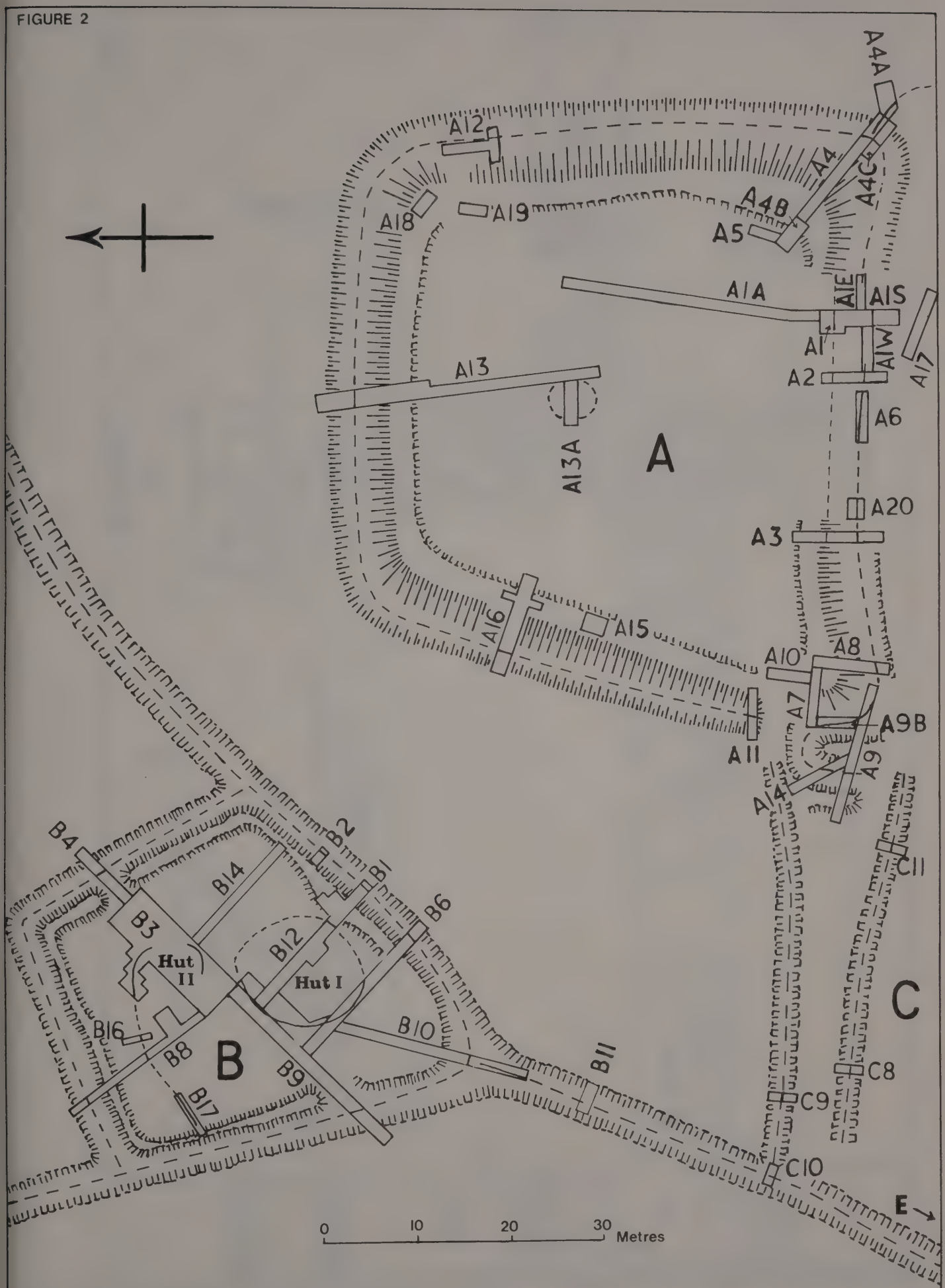
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FIGURE 3

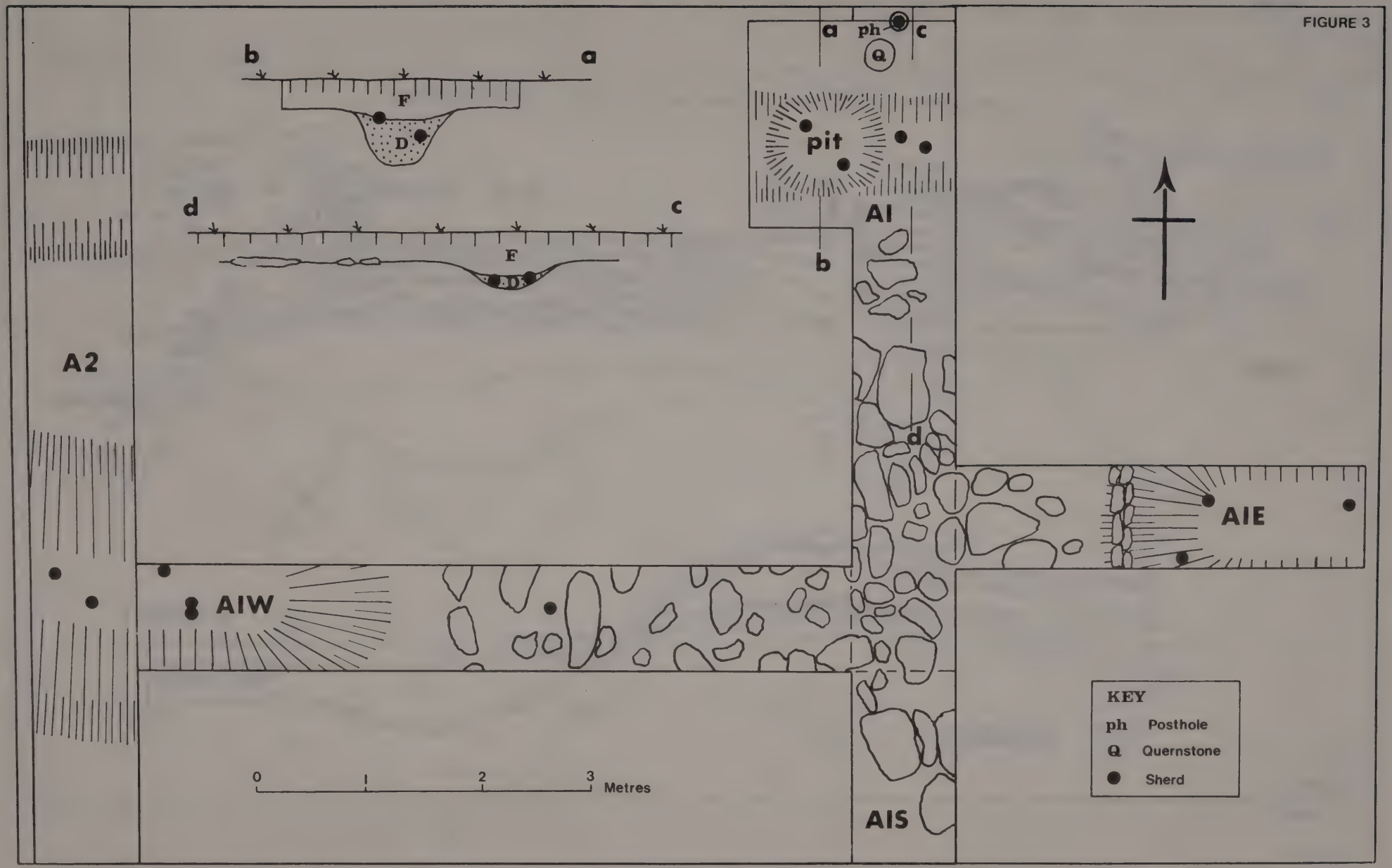
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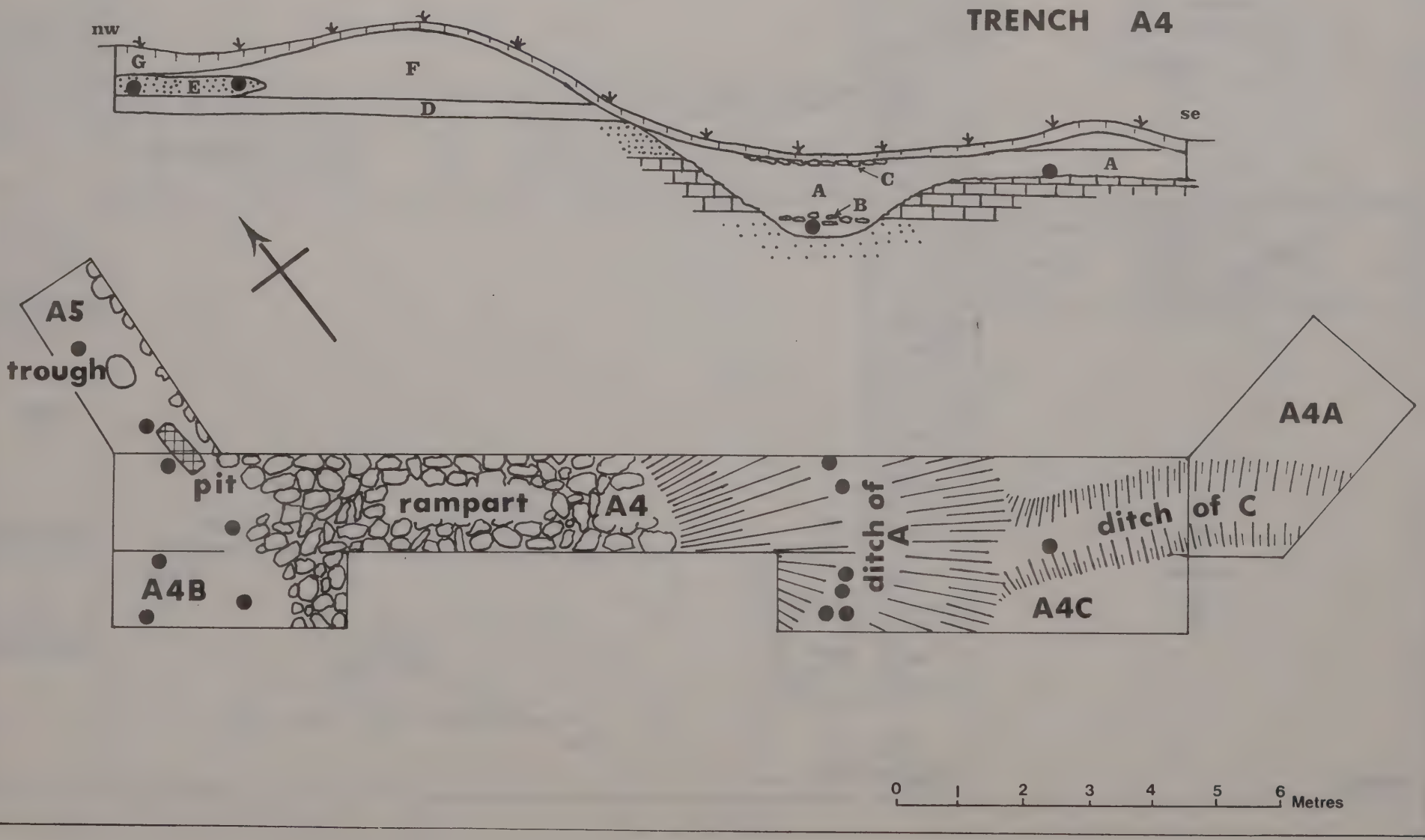
FIGURE 4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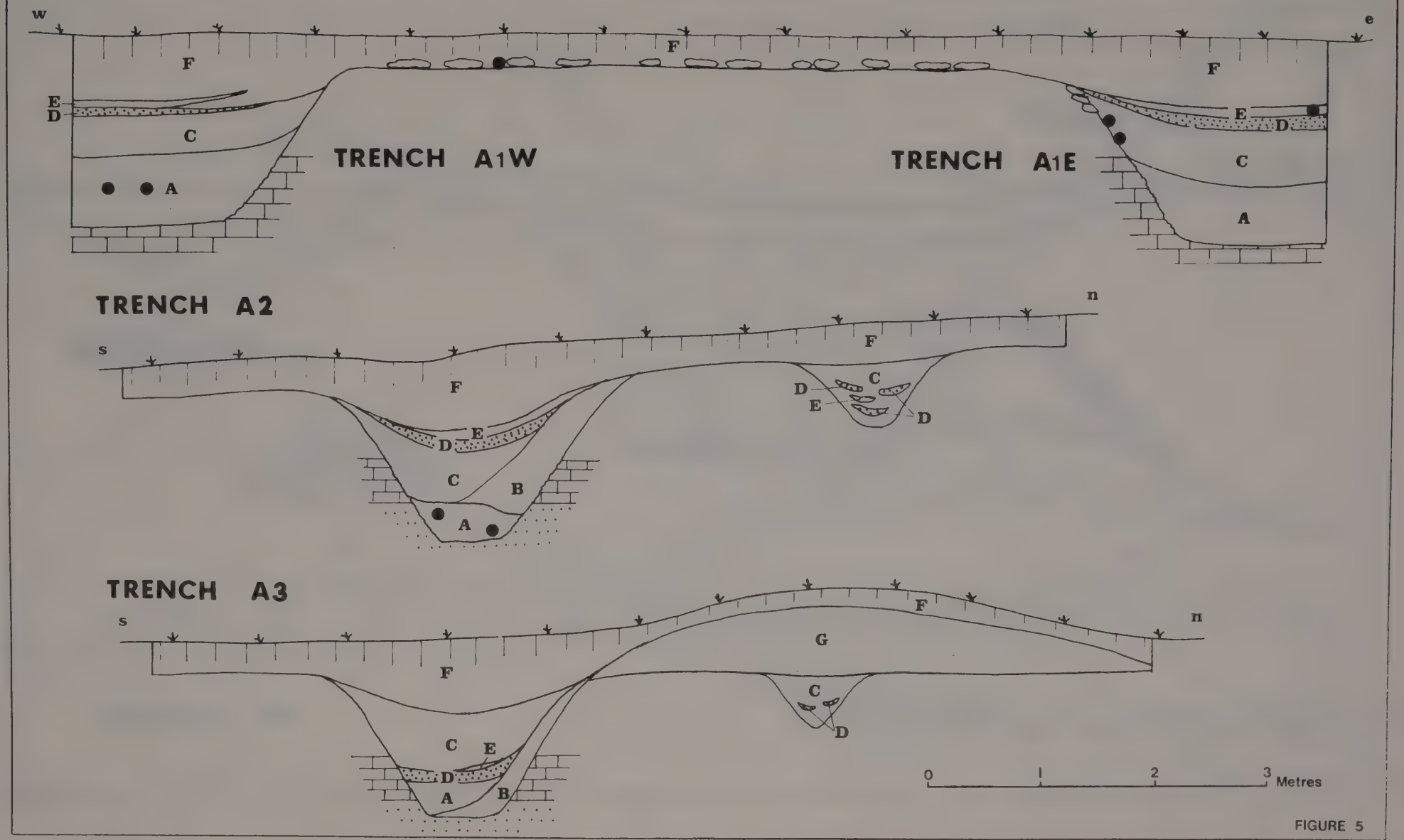
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FIGURE 5

FIGURE 6

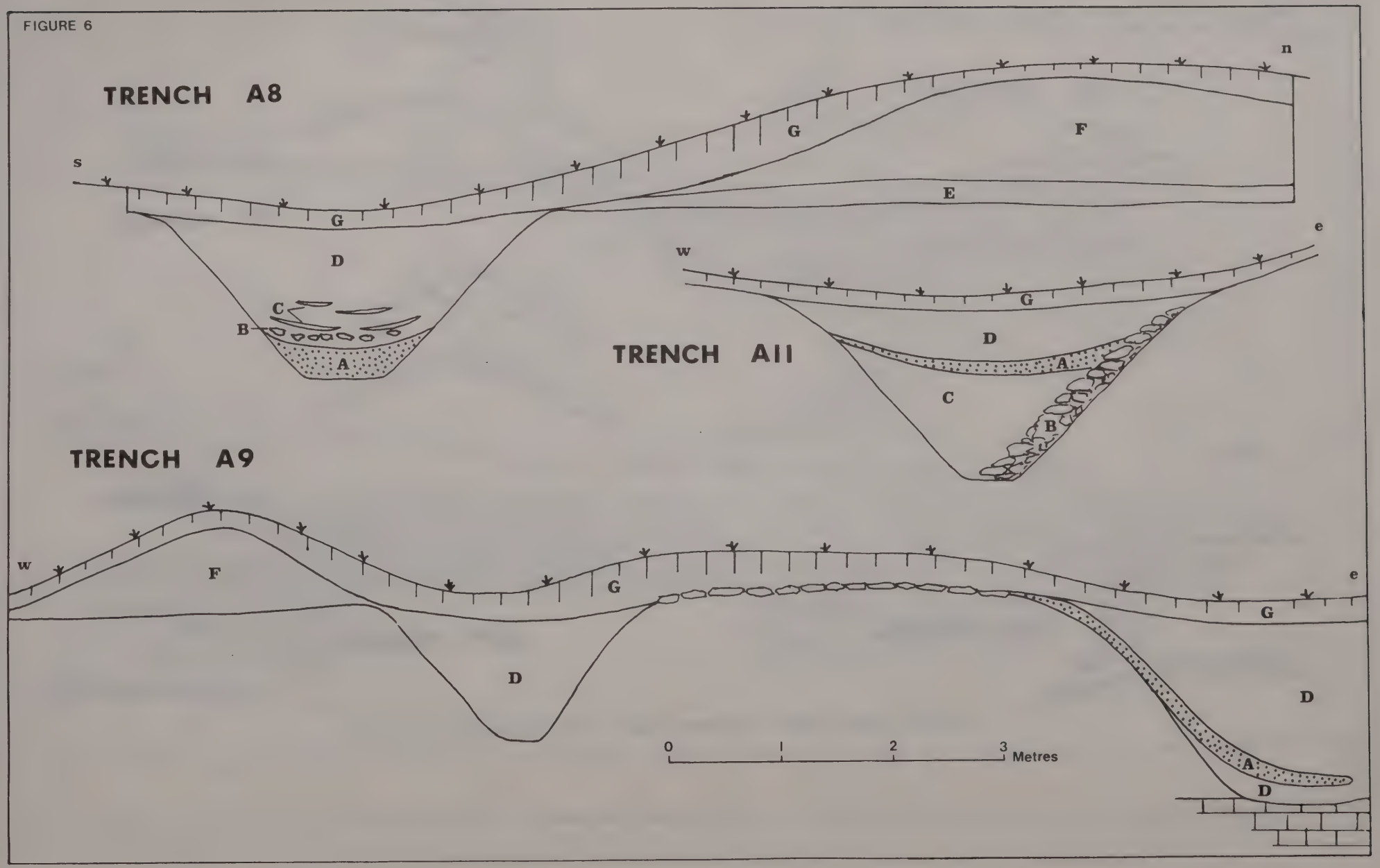
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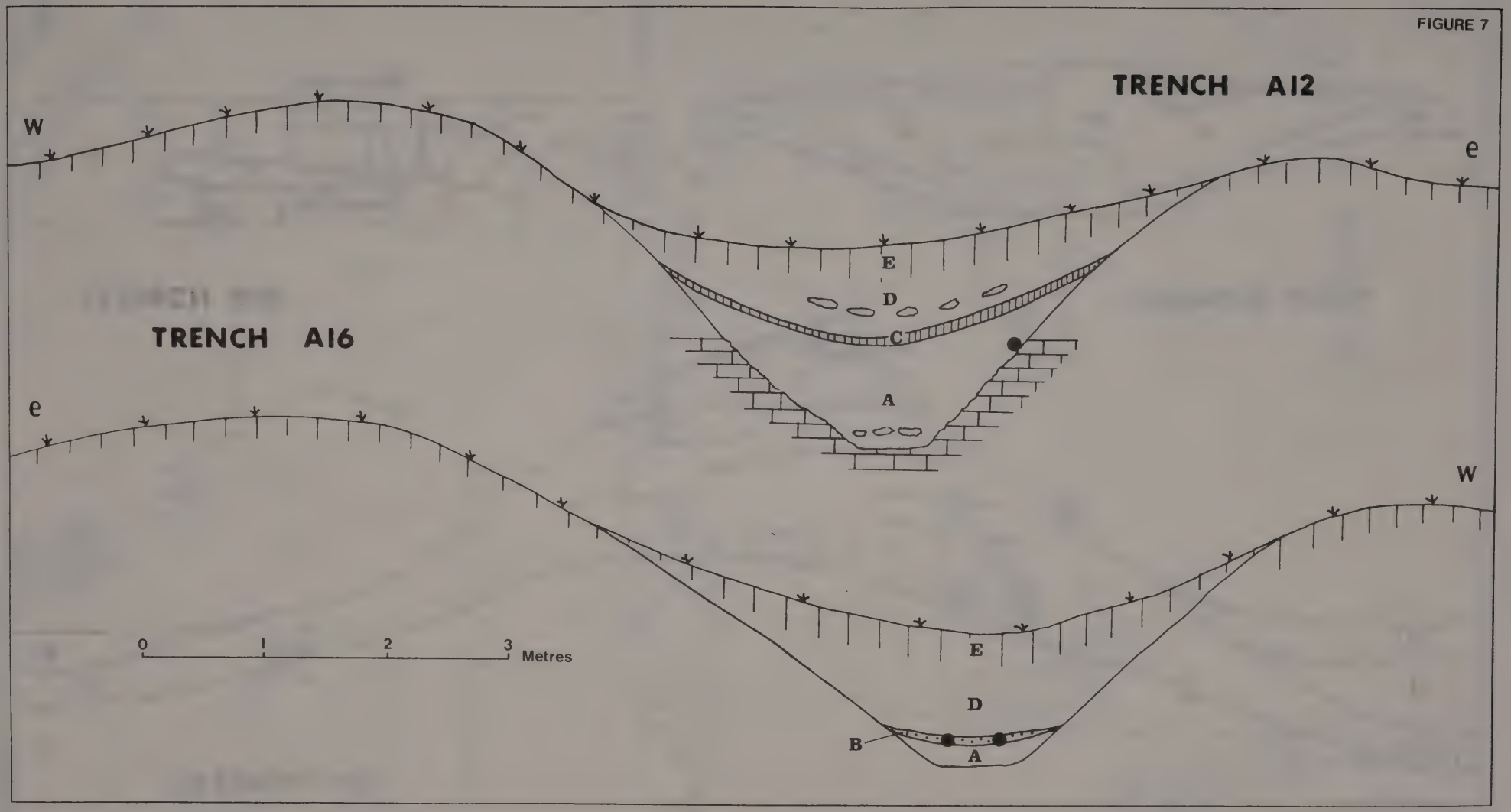
FIGURE 7



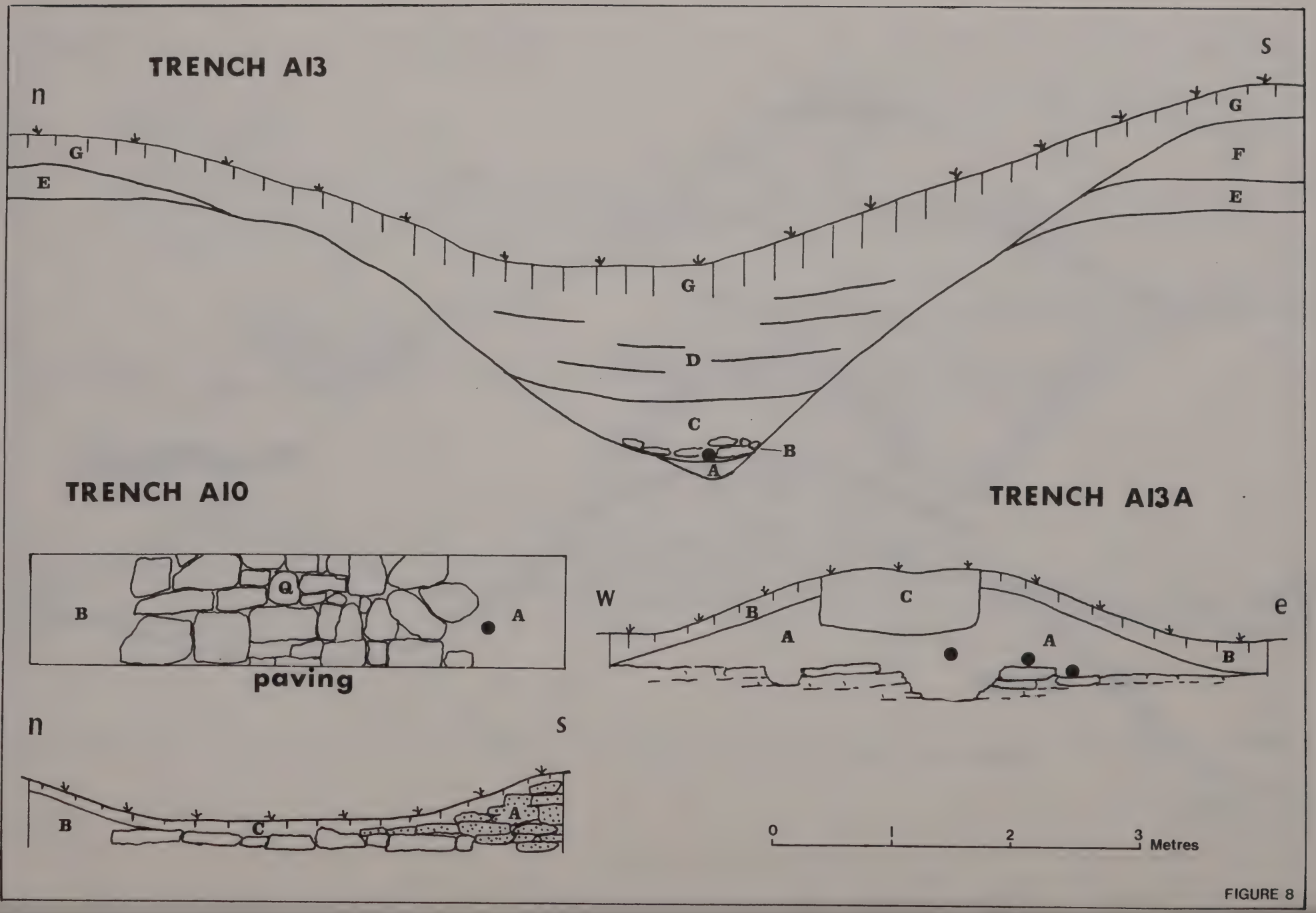

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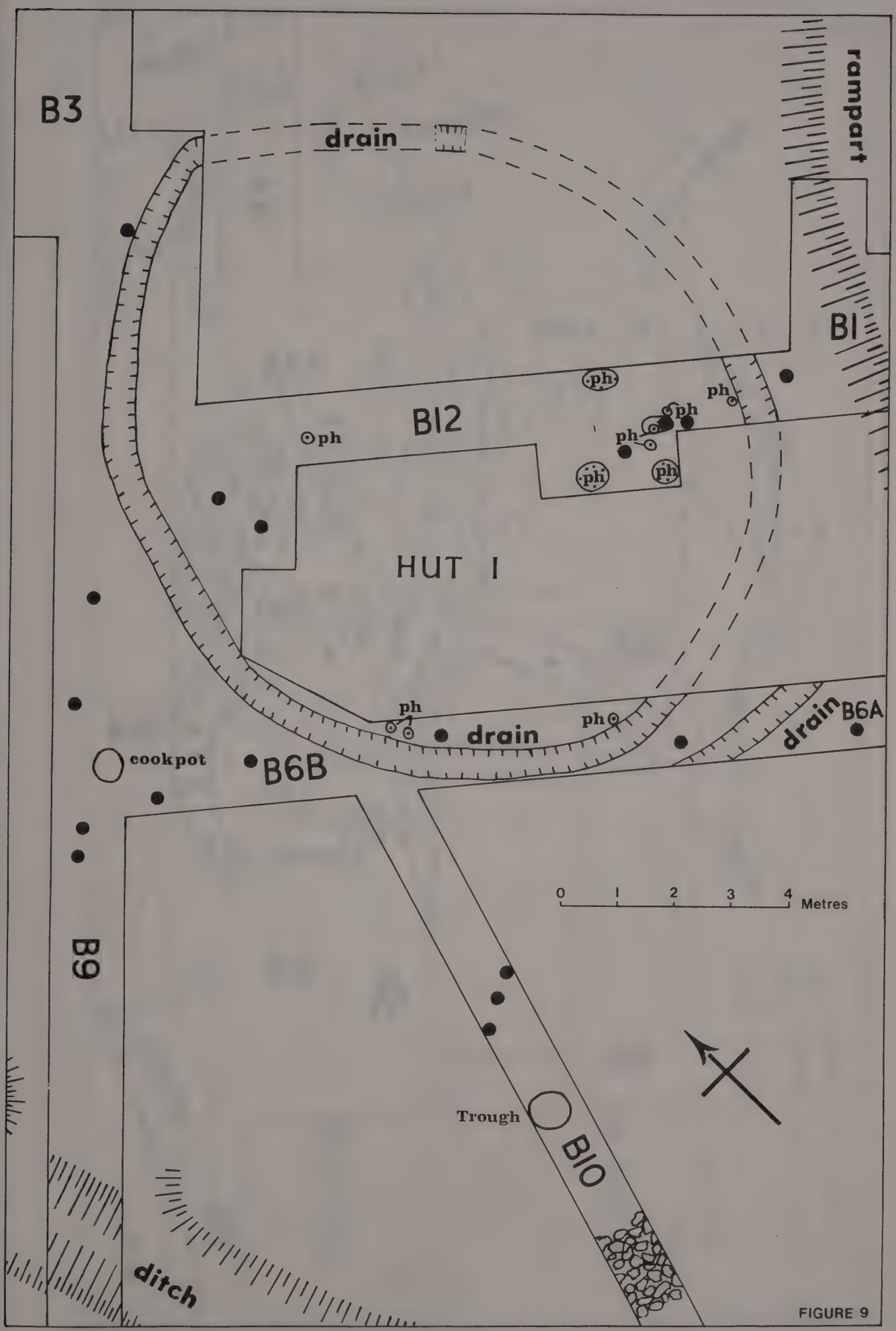
FIGURE 8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B10
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FIGURE 9

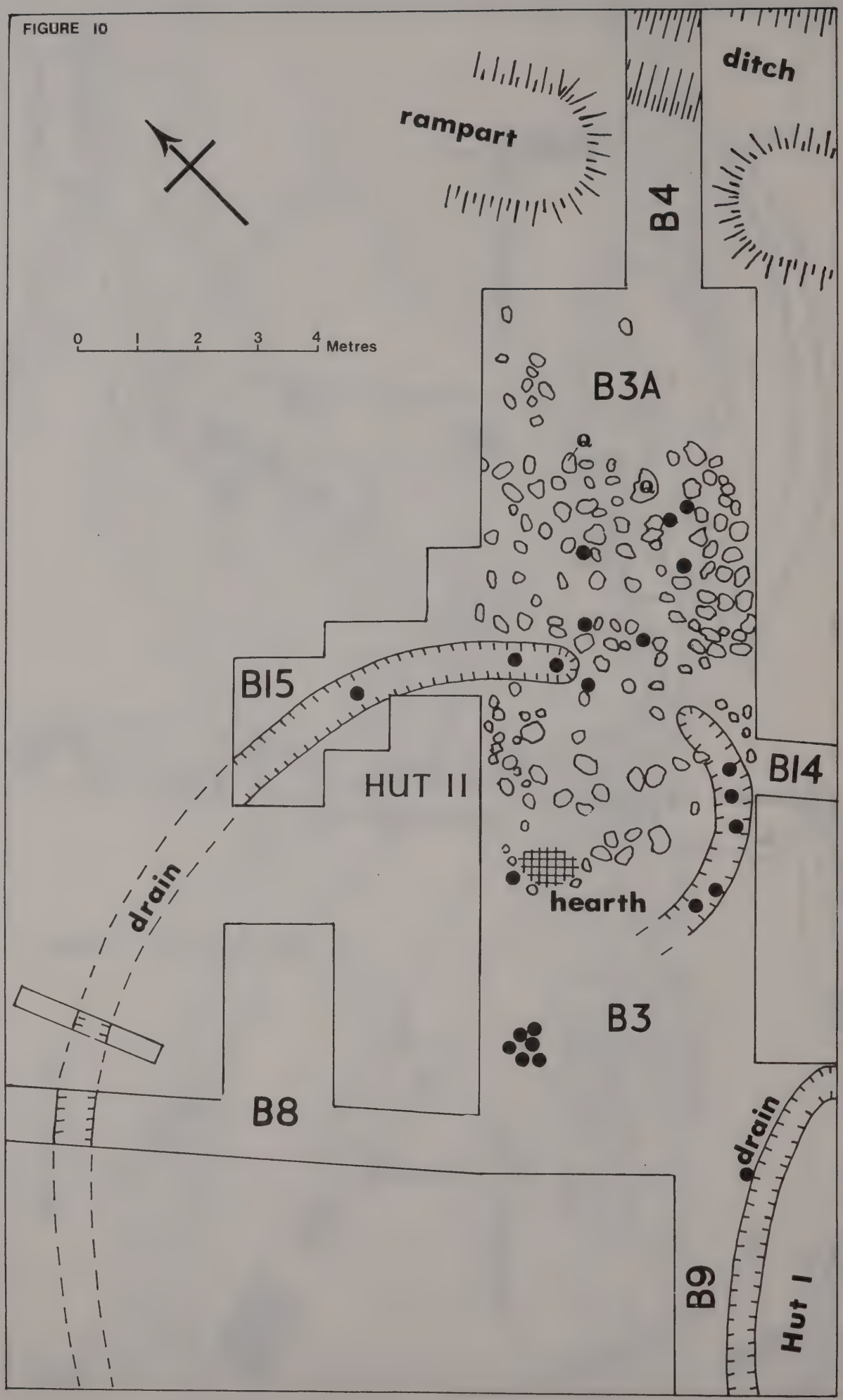
FIGURE 10
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0 1 2 3 4 Metres
B3A
B15
HUT II
B14
drain
hearth
B3
B8
drain
B9
Hut I

FIGURE 11

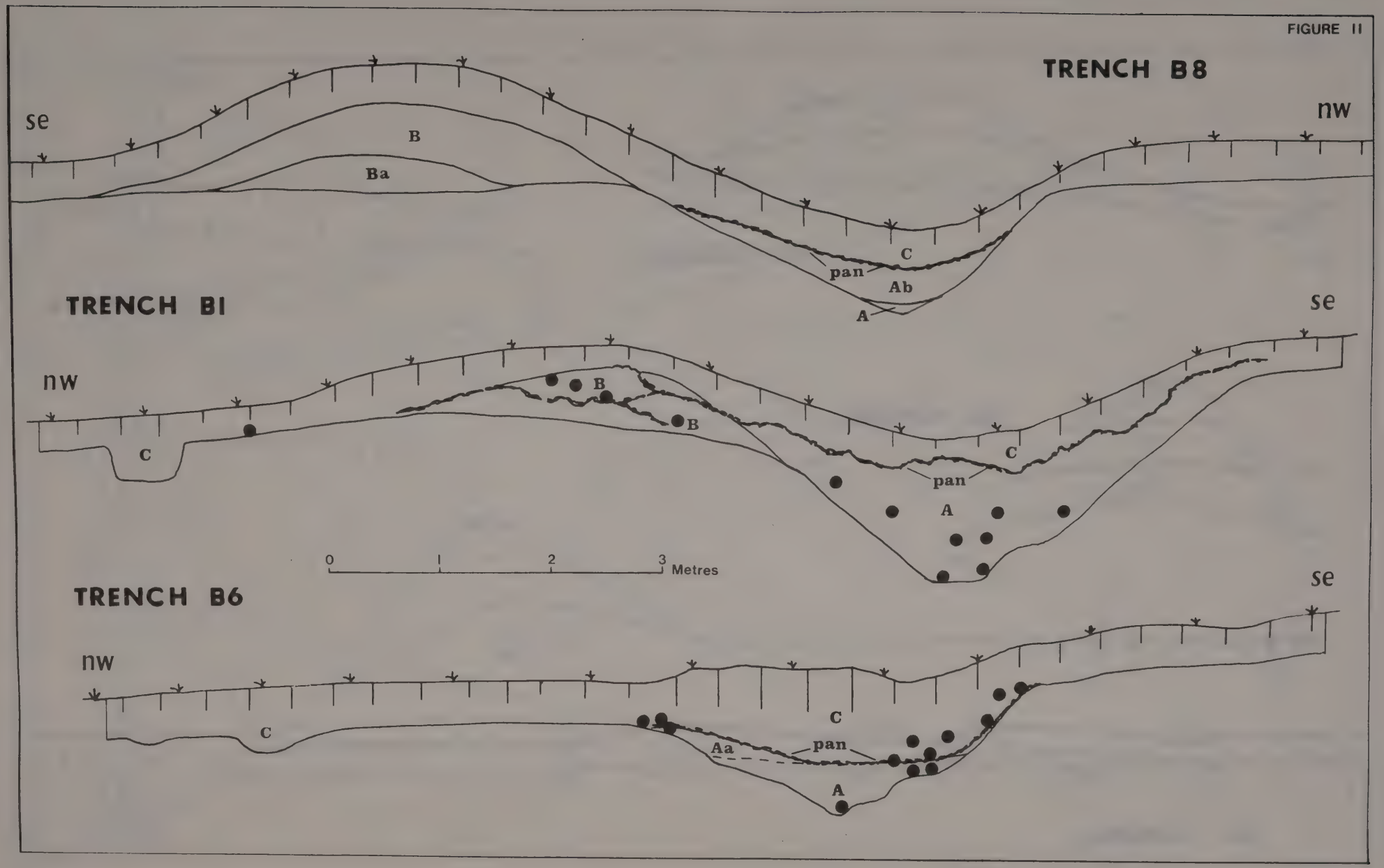

TRENCH B8
se
nw
B
Ba
C
pan
Ab
A
TRENCH B1
nw
se
B
B
C
C
pan
A
0
1
2
3
Metres
TRENCH B6
nw
se
C
C
Aa
pan
A

FIGURE 12

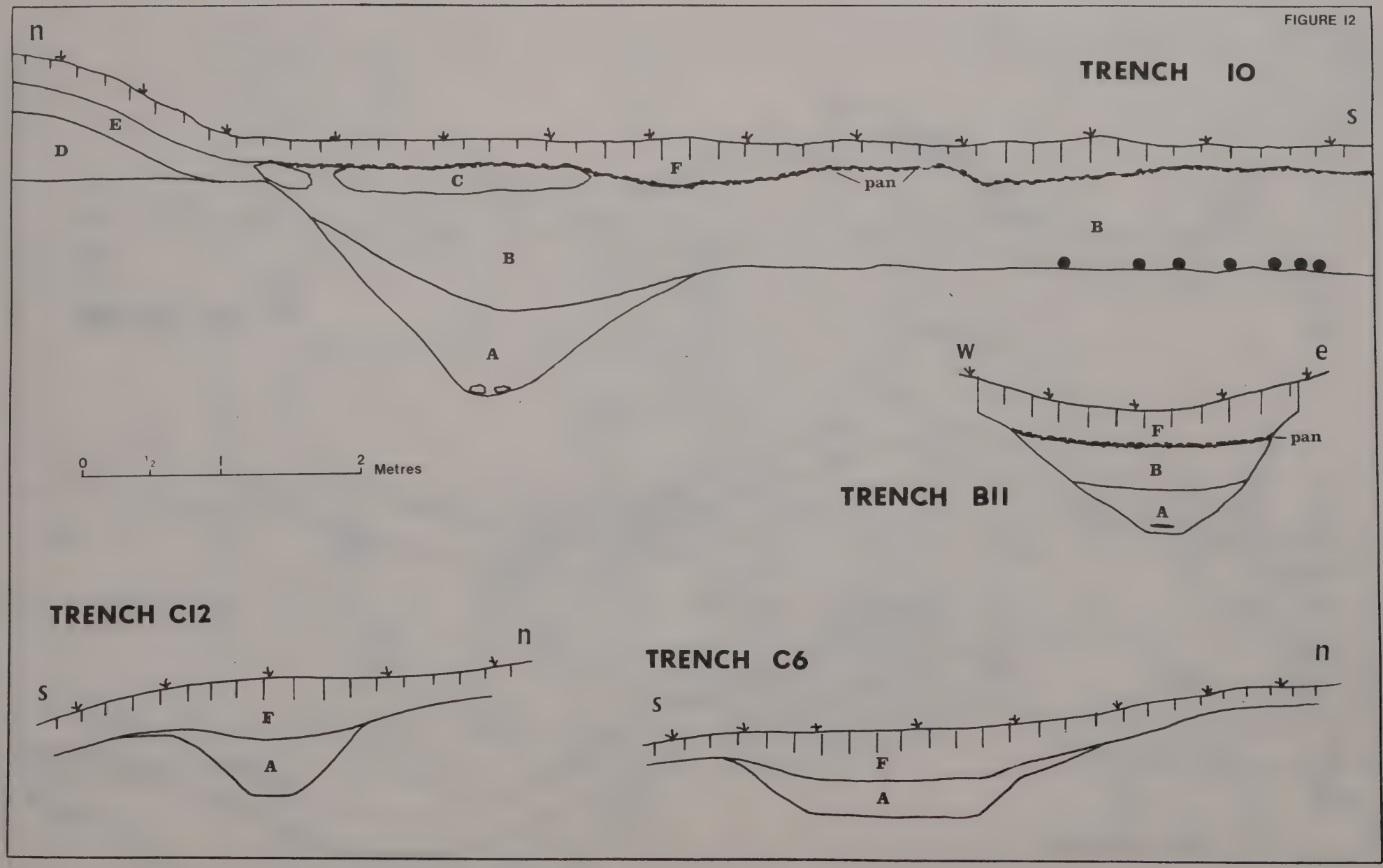

TRENCH 10
n
S
E
D
C
F
pan
B
B
A
0
½
1
2
Metres
W
e
F
pan
B
A
TRENCH B11
TRENCH C12
n
S
F
A
TRENCH C6
n
S
F
A

FIGURE 13

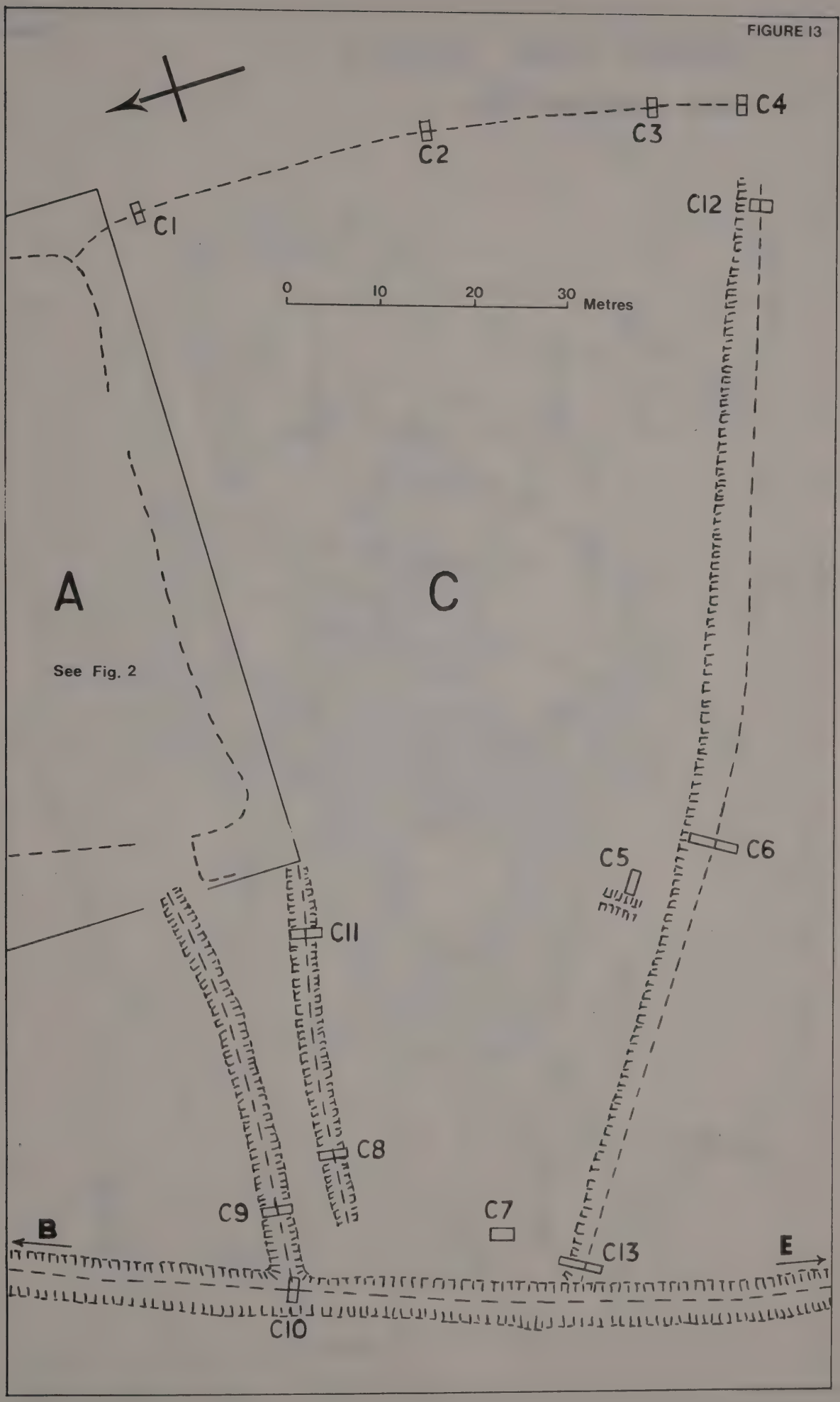

C1
C2
C3
C4
C12
0
10
20
30
Metres
A
C
See Fig. 2
C5
C6
C11
C8
C9
C7
C13
C10
B
E

FIGURE 14

LEVISHAM MOOR ENCLOSURE D

IRON SMELTING SITE

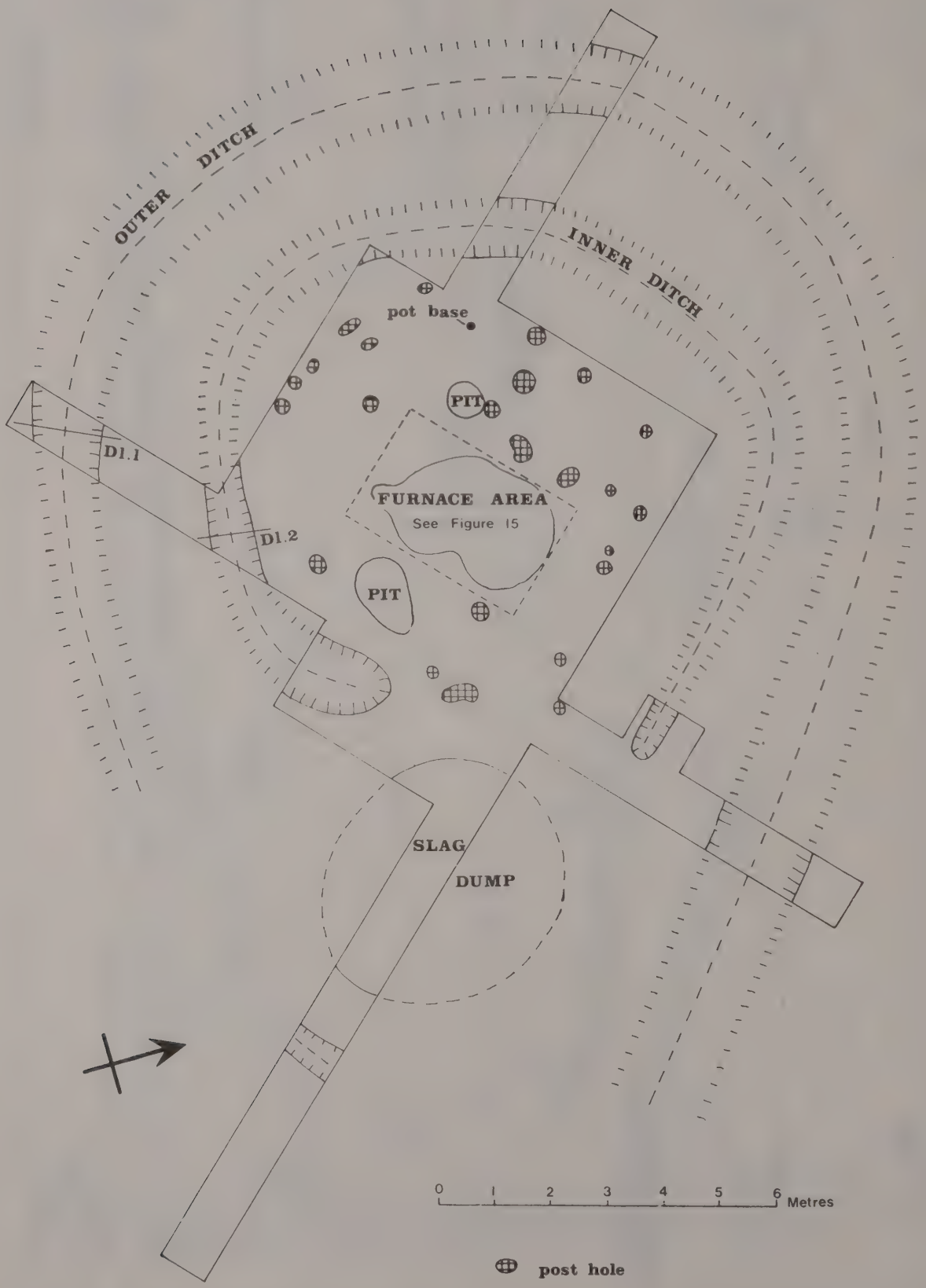
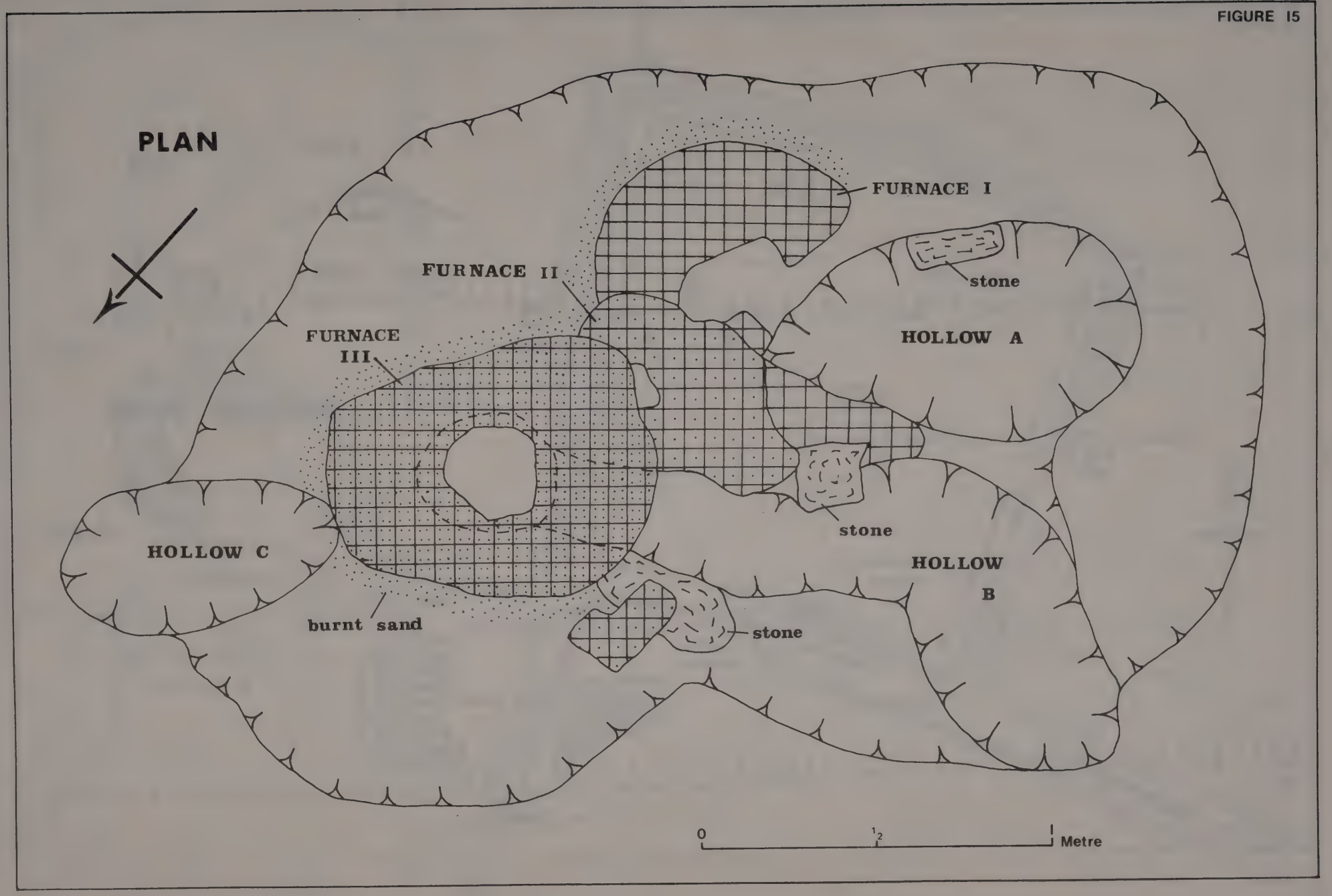
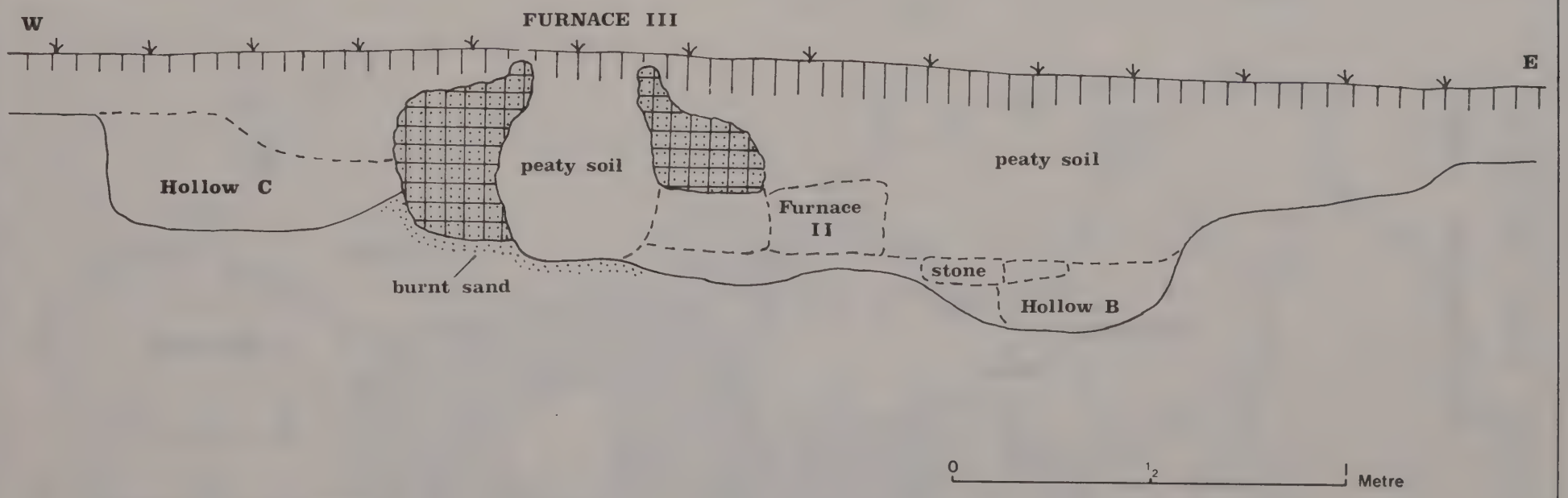
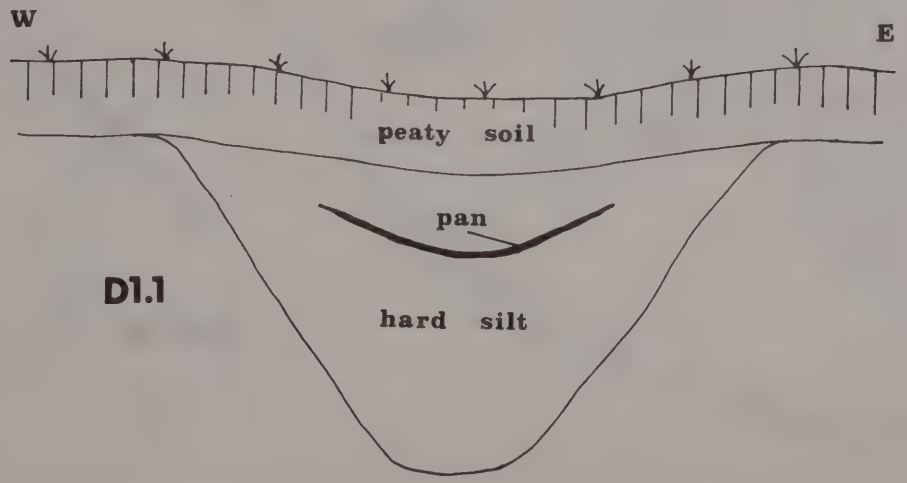


FIGURE 15


PLAN
FURNACE I
FURNACE II
FURNACE III
stone
HOLLOW A
HOLLOW C
stone
HOLLOW B
burnt sand
stone
0
½
Metre



DITCH SECTIONS



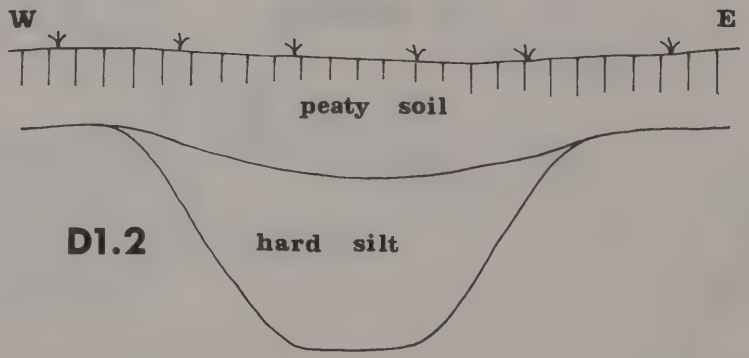


FIGURE 16

FIGURE 17

E2
E
E1
EIA
C
Pigtrough Griff
watercourse
watercourse
0
10
20
30
Metres
D
See Figs
14 to 16

FIGURE 18

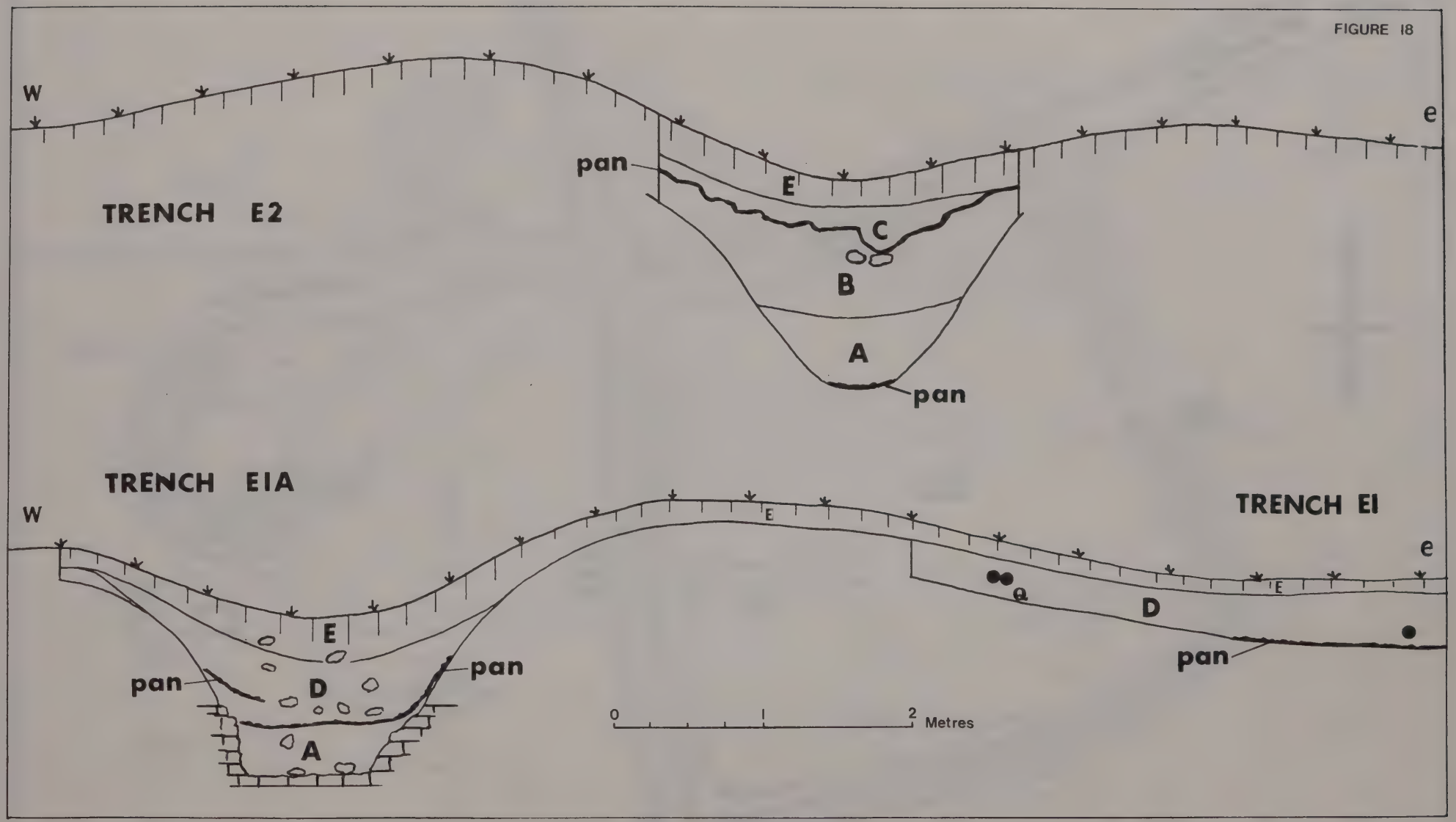

W
e
pan
E
C
B
A
pan
TRENCH E2
TRENCH E1A
W
E
pan
D
pan
A
TRENCH E1
e
E
D
pan
0
1
2
Metres

FIGURE 19

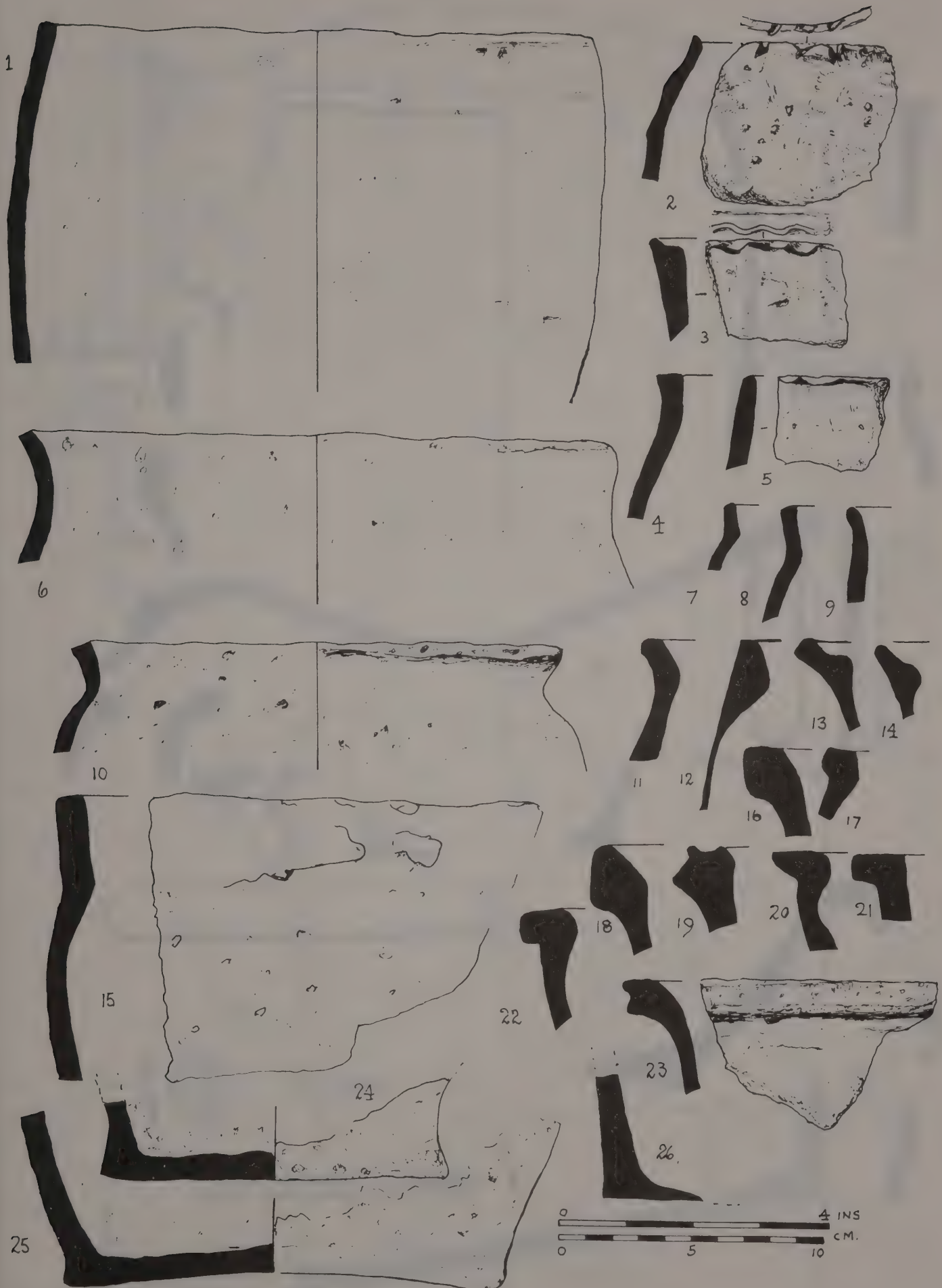

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
0
4 INS
CM.
0
5
10

FIGURE 20

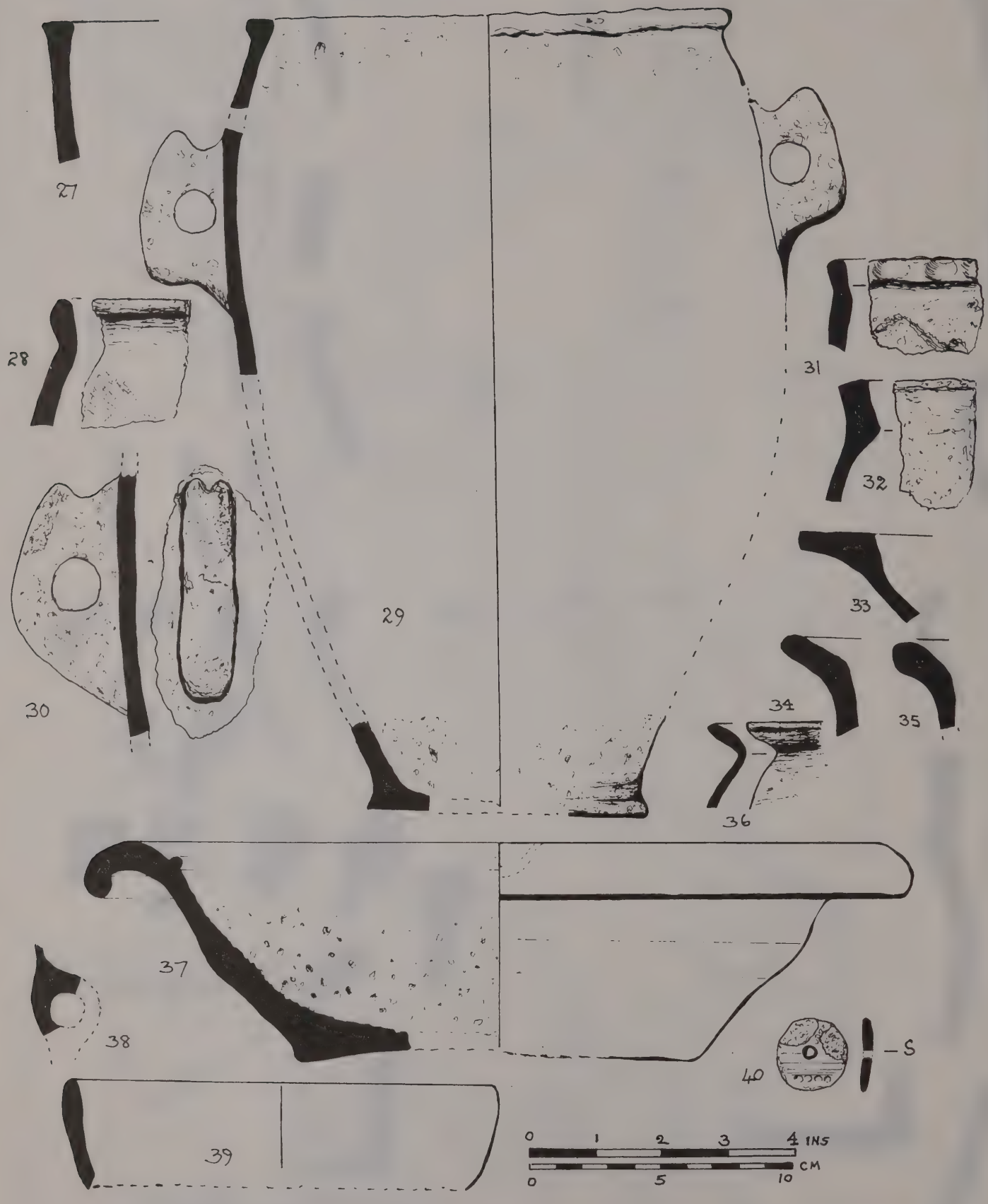


FIGURE 21

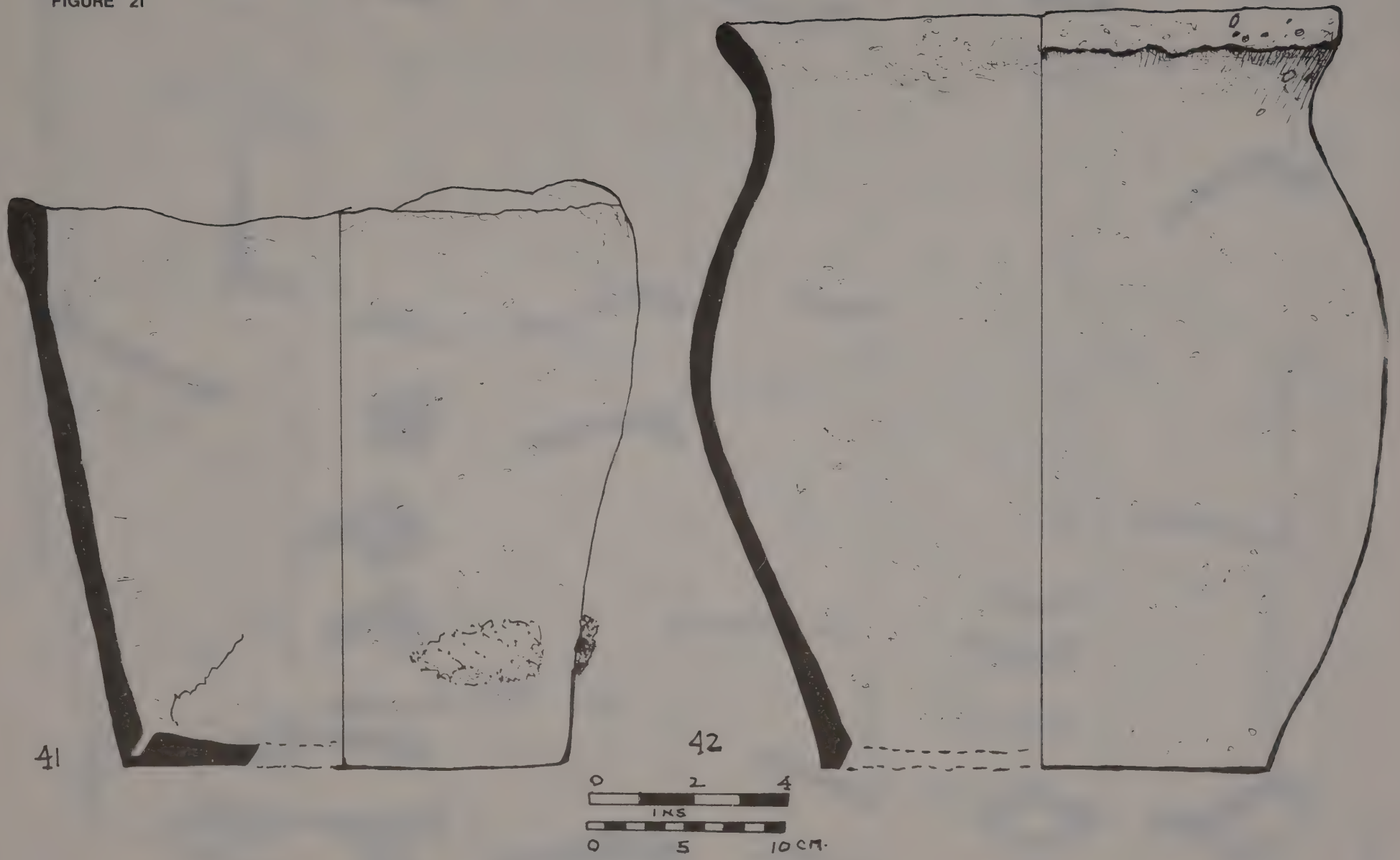


FIGURE 22

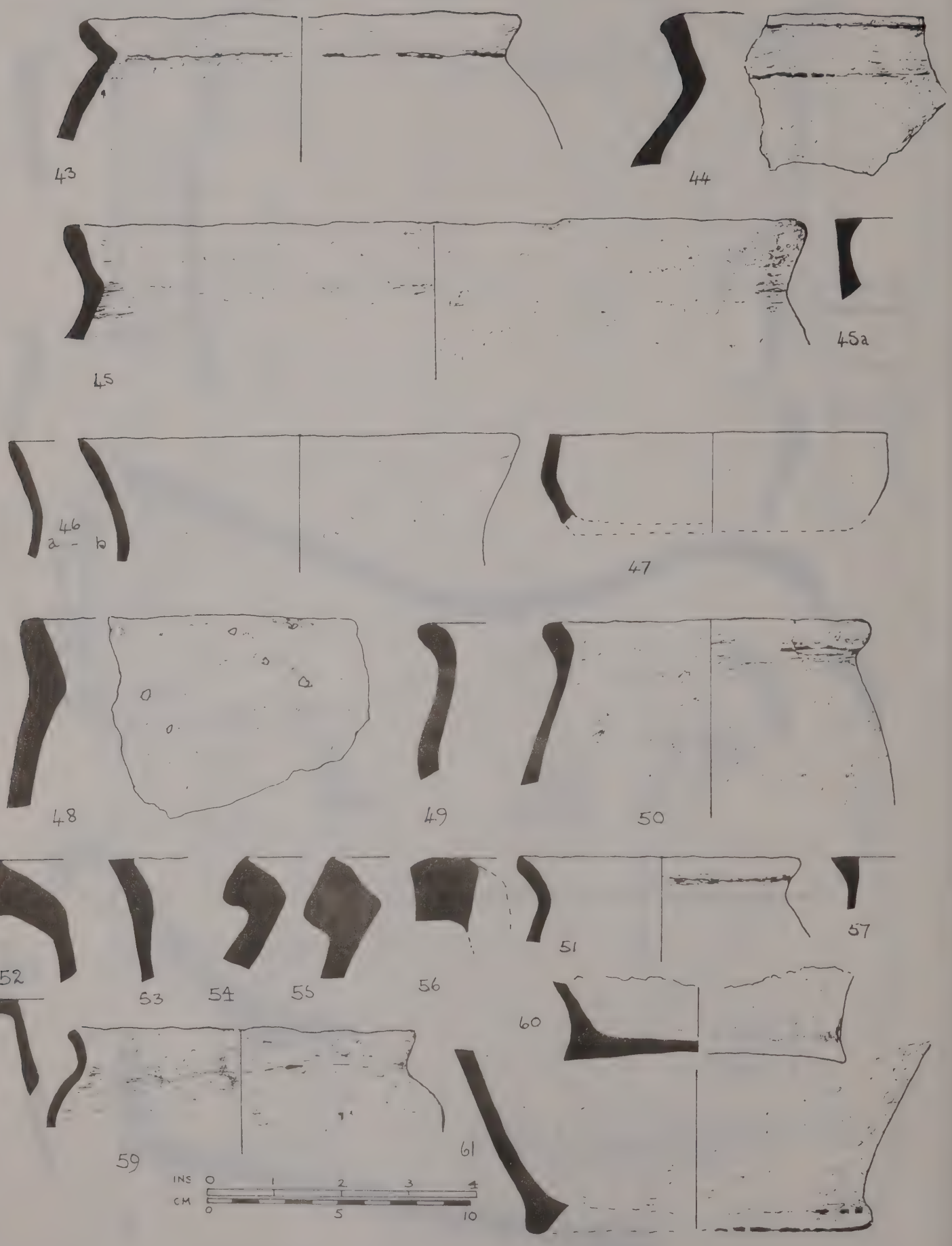

43
44
45
45a
46
a - b
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
INS 0 1 2 3 4
CM 0 5 10

FIGURE 23

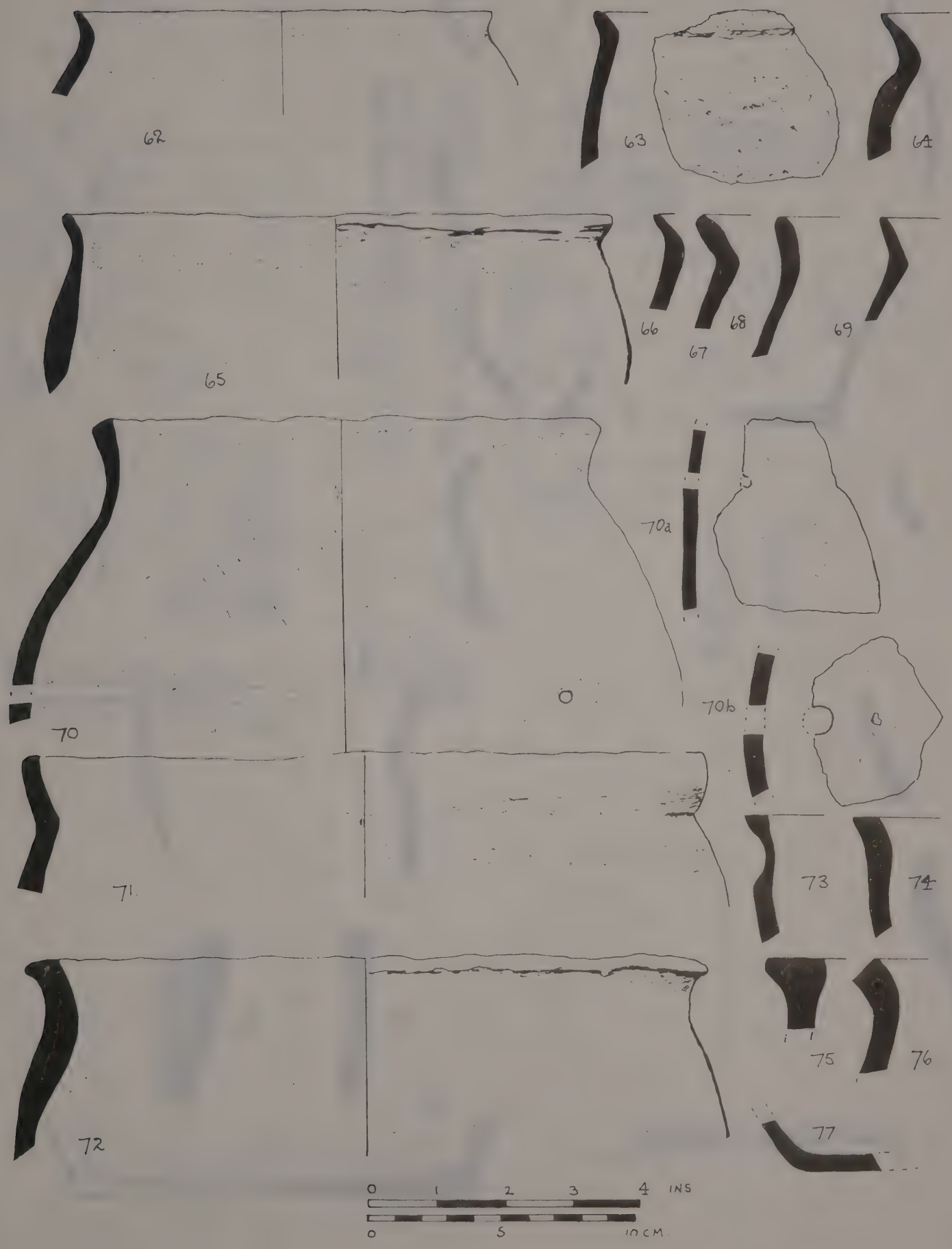
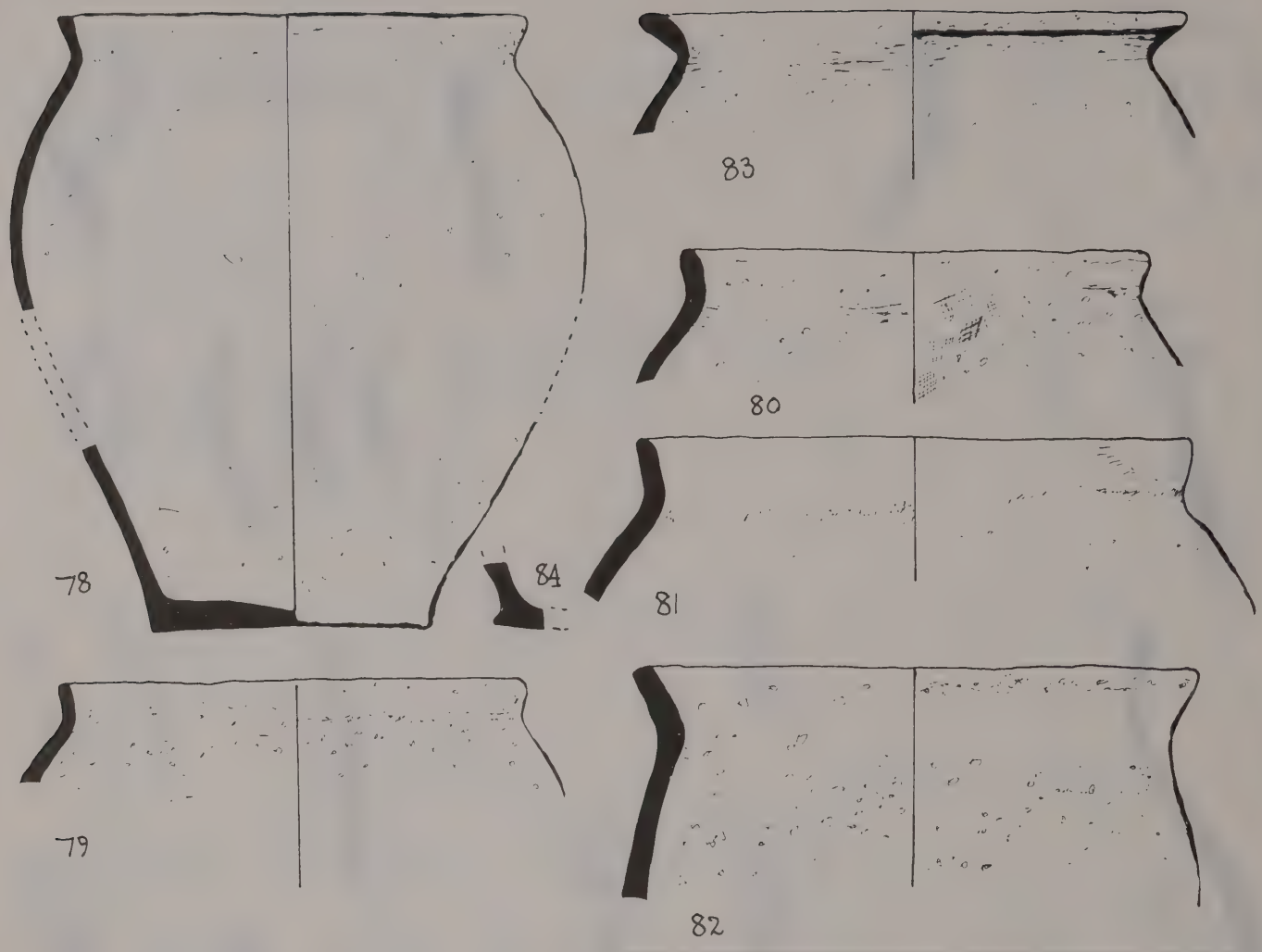

62
63
64
65
66
67
68
69
70
70a
70b
71
72
73
74
75
76
77
0 1 2 3 4 INS
0 5 10 CM.

FIGURE 24



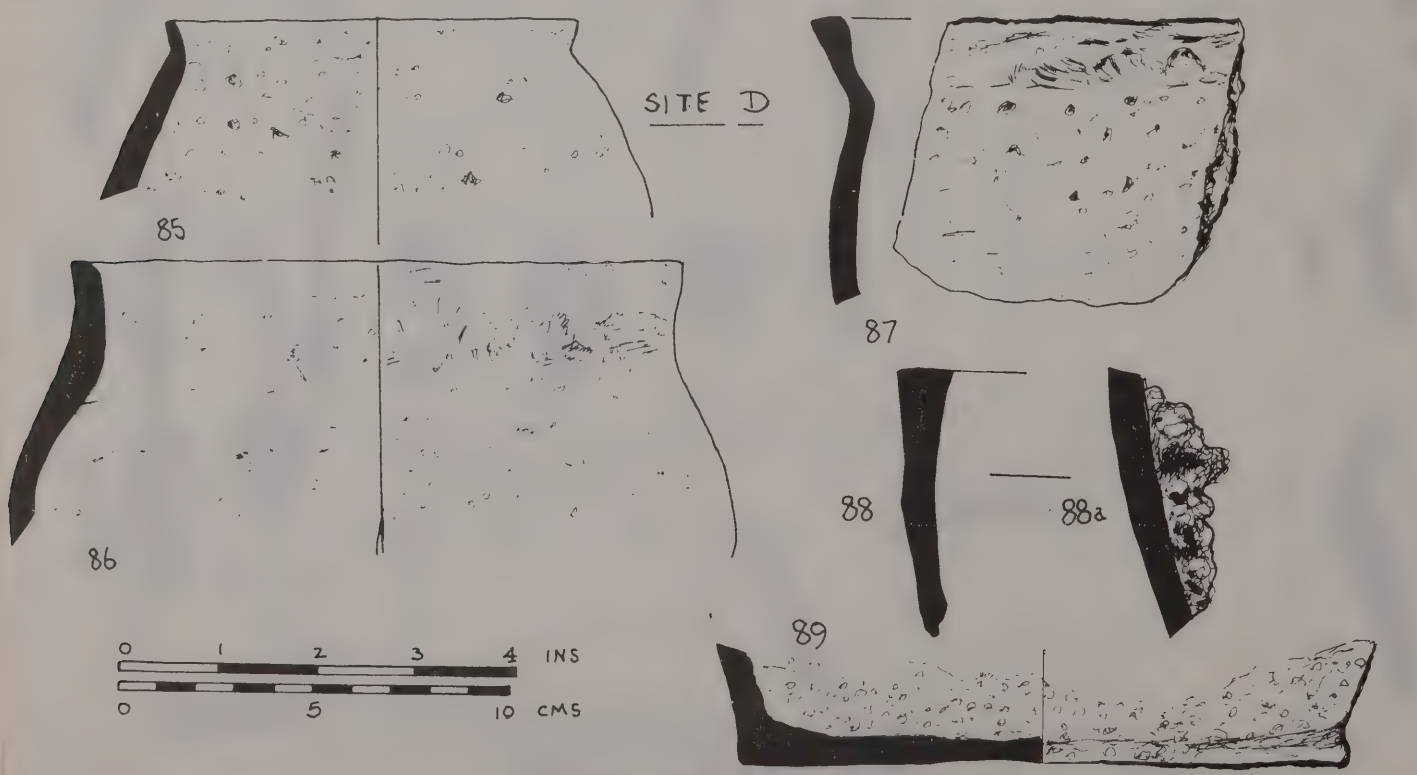
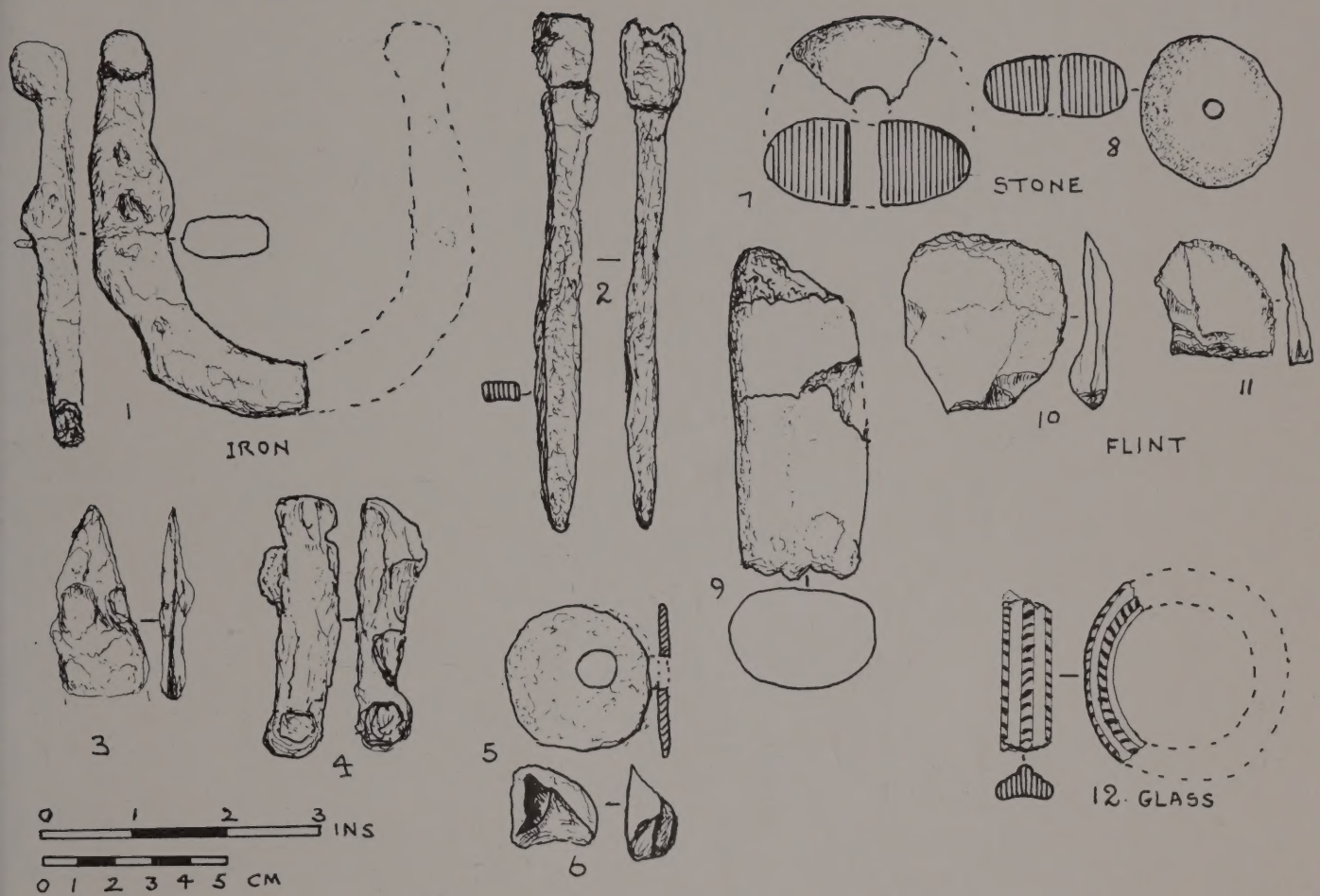
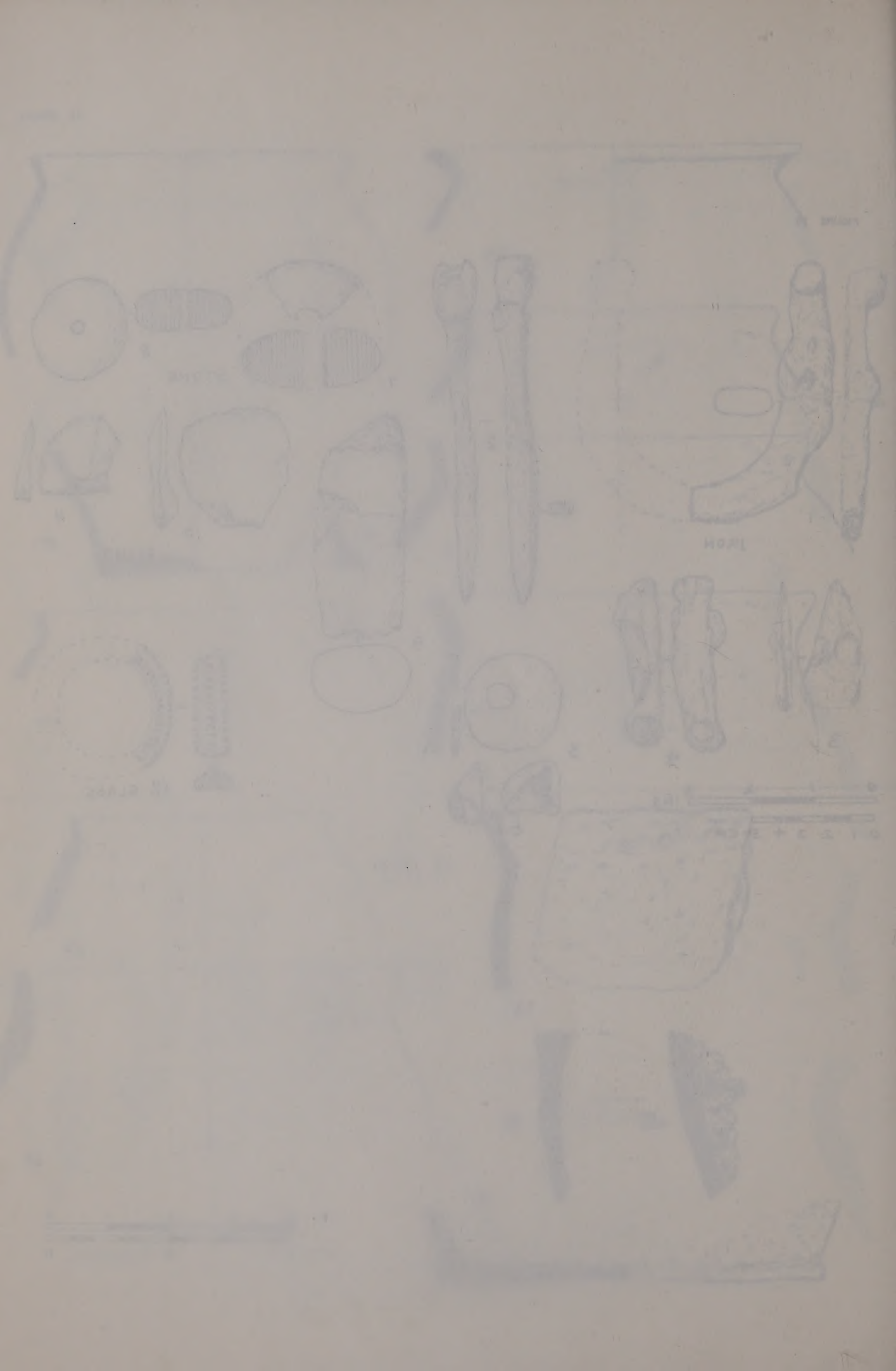


FIGURE 25





North York Moors National Park
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Bondgate
Helmsley
North Yorkshire
YO6 5BP